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Soundness in the Horse

A Guide for Buyer and Seller

Peter Gray, M.V.B., M.R.C.V.S.

J. A. Allen
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To Karen
Whose Gifts Make Birds Sing
To Peg and Nan
Lately Gone
And to My Family
Just For Being There

SOUNDNESS IN THE HORSE

Most people involved in the equestrian world at any level buy or sell a horse at some time and almost every transaction will involve the acquisition of a veterinary certificate of soundness. Until now, there has been no manual dealing with soundness and even in professional literature the subject has received only scant attention.

Horse-owners, whether they be buyers or sellers, will welcome this book because Peter Gray not only explains the mechanical aspects of equine soundness in great detail accompanied with profuse anatomical drawings but also deals with the general health of the horse and the complexities of conformation, movement, vice, temperament and suitability.

Advice is given on the presentation of animals for veterinary examination both for sale or in competitions such as eventing and endurance rides. The process of purchase, whether from private vendor or sale-ring, is explained, as are conditions of sale, trials, legal pitfalls, warranties and declarations.

For the veterinary surgeon or student there is a wealth of information based on the experiences of one who has been vetting horses for more than two decades. The value of this is not simply in the clinical material but also in the side-issues which make soundness examination such a controversial issue.

Everyone, from the person selling on an outgrown pony, to the professional owner buying a million-pound racehorse will learn a great deal from SOUNDNESS IN THE HORSE.

Price £18.95

Contents

	<i>Page</i>
<i>Acknowledgements</i>	<i>xv</i>
<i>Author's Note</i>	<i>xvii</i>
<i>Introduction</i>	<i>xix</i>
1 First Impressions	1
Purpose of Sale	1
The Buyer	1
The Vendor	2
<i>Vendor's Certificates</i>	2
First Approach	2
Presentation of the Horse	3
Stance and Balance	4
The Horse's Reactions to the Handler	5
Temperament	5
Visible Discharges	6
Breathing	6
General Health	6
Infectious Disease	7
Skin Conditions	7
<i>Sarcoids</i>	7
<i>Melanoma</i>	8
<i>Warts</i>	8
<i>Infectious Lesions on the Skin</i>	9
Early Termination	10
In a Sale Yard	10
2 The Heart and Eye	12
Anatomy of the Heart	12
Heart Sounds	13
Heart Rate	15
Factors Affecting Heart Action	16
Anatomy of the Eye	17
Vision	18
Factors Affecting Soundness of the Eye	20

3 The Visual Examination	21
Conformation and Soundness	23
Examination of the Head	23
Front View of the Neck and Shoulder	24
Side View of the Head	25
Side View of the Neck	28
The Forelimb	28
<i>The Elbow and Forearm</i>	30
<i>The Knee</i>	30
<i>The Cannon</i>	30
<i>The Fetlock, Pastern and Foot</i>	31
The Back	33
The Abdomen and Ribcage	34
The Hind Limb	34
<i>The Stifle</i>	35
<i>The Hock</i>	36
4 The Head and Neck	37
Head and Neck Functions	37
Anatomy of the Skull	37
Anatomy of the Mouth	39
Mucous Membranes	41
Anatomy of the Nostrils and Nasal Cavities	43
Further Examination of the Eye	44
Anatomy of the Ear	44
The Paranasal Sinuses	45
The Hyoid Bone	46
The Intermandibular Space	46
The Larynx	46
The Poll and Neck	47
Head Movements	48
5 The Ribs, Sternum and Forelimb	50
Anatomy of the Ribcage	50
Anatomy of the Sternum	51
Anatomy of the Forelimb	51
The Scapula	52
The Shoulder Joint	53
The Humerus	55
The Radius and Ulna	55
The Elbow Joint	56
Epiphyses and Diaphyses	56
The Carpus or Knee	57
6 The Lower Limb	60
The Metacarpal Bones	60

Tendons	62
<i>Causes of Injury</i>	63
<i>Common Factors Involved</i>	64
<i>Comment on Scanning Tendons and Leg Structure</i>	66
The Suspensory Ligament	66
The Fetlock Joint	67
The Proximal Sesamoid Bones	68
Heat and its Detection	69
The Phalanges	69
<i>First Phalanx (P1)</i>	69
<i>Second Phalanx (P2)</i>	69
<i>The Pastern Joint</i>	70
The Foot	71
<i>Third Phalanx (P3)</i>	73
<i>Cartilages of the Foot</i>	74
<i>The Coffin Joint</i>	75
<i>Distal Sesamoid of Navicular Bone</i>	75
External Anatomy of the Hoof	75
<i>The Wall</i>	75
<i>The Sole</i>	76
<i>The Frog</i>	76
<i>The Bars</i>	77
The Effect of the Foot on Circulation	77
Breed Influence on Foot Shape	77
 7 The Back, Abdomen and Hind Limb	 79
The Back	79
Anatomy of the Abdomen	79
The Inguinal Region	80
The Surface of the Dock	80
The Pelvic Girdle	81
Surface of the Pelvis	82
Anatomy of the Hind Limb	82
The Hip Joint	83
The Femur	84
The Stifle Joint	84
<i>Movement of the Stifle Joint</i>	85
The Tibia and Fibula	86
The Tarsus or Hock	87
<i>Movement of the Hock Joint</i>	88
 8 Examination at the Walk and Trot	 92
Viewing the Walk from Behind	92
Lameness at the Walk	92
<i>Pelvic Injuries</i>	94
<i>The Action from Behind</i>	94
<i>Turning</i>	95

Pain in Movement	96
Viewing the Walk from the Front	96
<i>The Action from the Front</i>	96
Viewing the Trot from Behind	98
<i>Lameness at the Trot</i>	98
<i>Action from Behind</i>	99
Viewing the Trot from the Front	99
Turning Sharply and Backing	100
Further Procedures	101
<i>Flexion Tests</i>	101
<i>Hoof Testing</i>	102
<i>Joint Mobility</i>	102
<i>Shoeing</i>	102
 9 The Wind under Strenuous Exercise	103
Anatomy of the Lungs	103
Lung Sounds	104
Special Indicators of Disease	104
Increased Respiratory Rates in Normal Horses	105
Increased Respiration in Disease	105
Auscultation	106
Endoscopy	106
Lungeing	106
Respiration at Faster Gaits	107
The Test	108
<i>Unfit Horses</i>	109
<i>Ridden Test</i>	109
<i>Silent but Abnormal</i>	109
Bleeders	111
The Lungs after Exercise	111
The Heart after Exercise	111
Buyer's Choice	111
 10 The Organ Systems	112
The Nervous System	112
Anatomy of the Spine	112
<i>The Cervical Vertebrae</i>	112
<i>The Thoracic Vertebrae</i>	114
<i>The Lumbar Vertebrae</i>	114
<i>The Sacrum</i>	115
<i>The Coccygeal Vertebrae</i>	116
Spinal Movement	116
Functioning of the Nervous System	116
The Autonomic System	117
The Voluntary System	117
Reflexes	117
Gauging the Health of the Nervous System	118

The Senses	119
<i>Sight</i>	119
<i>Hearing</i>	119
<i>Taste</i>	120
<i>Smell</i>	120
<i>Touch</i>	120
The Digestive System	120
The Blood-Vascular System	121
The Urinary System	121
The Reproductive System	121
<i>The Stallion</i>	123
<i>The Gelding</i>	123
 11 Examination After Rest, and Certification	125
Certification	125
Description	126
<i>Pedigree</i>	126
<i>Non-thoroughbreds</i>	126
<i>Colour</i>	128
<i>Sex</i>	128
<i>Age</i>	128
<i>Markings</i>	128
<i>Height</i>	130
Manners and Temperament	130
Action	131
Dentition	131
The Certificate	136
Written Warranties	138
 12 The Variety of Horses Examined	139
Examination of Foals	139
<i>Non-thoroughbred Foals</i>	141
Yearlings	141
Two-year-olds	143
Three-year-olds	144
Pre-sale Vetting	144
National Hunt Racehorses	144
Mares	145
Stallions	145
Show-jumpers	145
Eventers	146
Dressage Horses	146
Point-to-Pointers	146
Show Horses	148
Young and Unbroken Riding Horses	149
<i>Ridden</i>	149
Ponies	149

Driving Horses	149
Maturity and Soundness	149
Trotters	152
Working Horses	152
The Older Animal	152
13 Special Examinations	153
Radiography	153
Endoscopy	156
Diagnostic Ultrasound	157
Electrocardiography	157
Blood Analysis	159
14 Conditions of Sale and Warranties	160
General Conditions (British Sales)	160
<i>Broodmare Certificates</i>	162
<i>Conditions of the Larynx</i>	162
General Conditions (in USA Sales)	162
<i>Broodmare Certificates</i>	164
Pre-sales Veterinary Certificates in Ireland	164
Contagious Equine Metritis (CEM)	165
Influenza Vaccination	165
Warranties	165
Drugs	165
15 Some Comments on the Law	166
Public Sale	166
Private Sale	166
Certificates provided by a Vendor	167
Buying Considerations	167
Warranty	168
Soundness in Law	168
Vice	169
Description	169
Drugs	170
Unfair Conditions	170
Reasons for Sale	170
Misrepresentation	171
Changes of Name	171
Time Limits	171
Agents	171
Trial	171
Contract at Auction	172
<i>Buyer and Auctioneer</i>	172
<i>Vendor and Auctioneer</i>	172
<i>Buyer and Vendor</i>	172

The Senses	119
<i>Sight</i>	119
<i>Hearing</i>	119
<i>Taste</i>	120
<i>Smell</i>	120
<i>Touch</i>	120
The Digestive System	120
The Blood-Vascular System	121
The Urinary System	121
The Reproductive System	121
<i>The Stallion</i>	123
<i>The Gelding</i>	123
11 Examination After Rest, and Certification	125
Certification	125
Description	126
<i>Pedigree</i>	126
<i>Non-thoroughbreds</i>	126
<i>Colour</i>	128
<i>Sex</i>	128
<i>Age</i>	128
<i>Markings</i>	128
<i>Height</i>	130
Manners and Temperament	130
Action	131
Dentition	131
The Certificate	136
Written Warranties	138
12 The Variety of Horses Examined	139
Examination of Foals	139
<i>Non-thoroughbred Foals</i>	141
Yearlings	141
Two-year-olds	143
Three-year-olds	144
Pre-sale Vetting	144
National Hunt Racehorses	144
Mares	145
Stallions	145
Show-jumpers	145
Eventers	146
Dressage Horses	146
Point-to-Pointers	146
Show Horses	148
Young and Unbroken Riding Horses	149
<i>Ridden</i>	149
Ponies	149

Driving Horses	149
Maturity and Soundness	149
Trotters	152
Working Horses	152
The Older Animal	152
13 Special Examinations	153
Radiography	153
Endoscopy	156
Diagnostic Ultrasound	157
Electrocardiography	157
Blood Analysis	159
14 Conditions of Sale and Warranties	160
General Conditions (British Sales)	160
<i>Broodmare Certificates</i>	162
<i>Conditions of the Larynx</i>	162
General Conditions (in USA Sales)	162
<i>Broodmare Certificates</i>	164
Pre-sales Veterinary Certificates in Ireland	164
Contagious Equine Metritis (CEM)	165
Influenza Vaccination	165
Warranties	165
Drugs	165
15 Some Comments on the Law	166
Public Sale	166
Private Sale	166
Certificates provided by a Vendor	167
Buying Considerations	167
Warranty	168
Soundness in Law	168
Vice	169
Description	169
Drugs	170
Unfair Conditions	170
Reasons for Sale	170
Misrepresentation	171
Changes of Name	171
Time Limits	171
Agents	171
Trial	171
Contract at Auction	172
<i>Buyer and Auctioneer</i>	172
<i>Vendor and Auctioneer</i>	172
<i>Buyer and Vendor</i>	172

Unregistered Horses	172
Points to Consider	172
16 Some Buying Considerations	174
Buying at Sales	174
Veterinary Certificates	175
Unwarranted Horses	175
Inspection in the Stable	175
At the Ring	176
Vetting at Public Sale	177
Private Sale	177
Selling On	178
Veterinary Fees	179
17 Vendor's Interests	180
Training and Temperament	180
Lungeing	181
Facilities	181
Catalogue Descriptions	181
Declarations and Warranties	181
Heart Murmurs	182
Previous Operations	182
Future Use	183
The Vendor at Public Sale	183
Private Sale	183
18 Examination at Events and Endurance Contests	184
Veterinary Examinations	184
Manner of Inspection	185
<i>First Examination</i>	185
<i>First Inspection</i>	185
<i>Second Inspection</i>	185
<i>Second Examination</i>	185
<i>Third Inspection</i>	185
Rules for Dressage Events	186
Rules for Driving Events	186
Veterinary Guidelines for Long-Distance Driving Events	186
<i>The Preliminary Examination</i>	186
<i>Halfway Halt</i>	187
<i>The Finish</i>	187
Long-Distance Rides	187
Examination for Insurance	187
<i>Conclusion</i>	189
<i>Index</i>	191

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Author's Note

This book describes how a horse is vetted for soundness by a veterinary surgeon. Each stage of the examination is described, chapter-by-chapter, with appropriate diversions into other aspects of the horse's anatomy, wellbeing and management.

I have used the male gender throughout when referring to the veterinary surgeon. This is for convenience only and no offence to my female colleagues is intended.

Introduction

The amount of written material on soundness is, for a subject as old as veterinary medicine, extremely scant. The only extensive work published in recent years has been *The Examination of Animals for Soundness* which was written by R. H. Smythe, MRCVS, and published in 1959. Smythe was a man who had spent his life in practice. He was a prolific writer and a distinguished external examiner in anatomy at The Royal College of Veterinary Surgeons.

The inspiration for *Soundness in the Horse* came from an earlier work, *Modern Practical Farriery*, written by W. J. Miles, MRCVSL, and published in 1868. Miles dealt with the subject of soundness in some depth and much of the information in his book is still relevant today.

However, today we are not encouraged to think of any horse as being 'sound' in the traditional sense. Yet the word is still in everyday use in the equine world and it is not likely to leave our vocabulary, nor should it.

The dictionary definition of 'sound' is, according to Chambers, *uninjured; unimpaired; healthy; wholesome*. People buying or selling horses have no doubt what the word means and use it fearlessly. But lawyers and veterinary surgeons are only too aware that soundness, as an ideal clinical state, is exceptionally difficult to prove and seek to avoid the term. Nevertheless, the description appears in the catalogues of most horse sales today, both in Europe and the USA.

In this book, the term is used in its traditional sense, without disrespect, or apology, to anyone. It is used to signify the health status of a horse and the prospect that it will be able to fulfil the purpose for which it is being bought. For example, a horse purchased as a sound hunter must be able to hunt, with no evident barrier to its natural lifespan as a hunter. Any vendor who declares an animal 'sound for hunting' is liable for this to be so. If it proves not to be, the horse can be returned and there could be a case for damages in some defined situations.

The subject of soundness is of interest to anyone who has ever owned a horse, or who ever intends owning one. In this, there is little difference between the professional breeder/owner selling a million-pound racehorse and a private individual parting with a thirty-year-old pony. The purpose of sale may be simply to dispose of an unwanted animal, but it may just as easily be a commercial exercise with the sole objective of making profit.

For the veterinary surgeon, the duty of soundness examination is always onerous, and one of the most challenging responsibilities of the job. Even for the expert, with the experience of many years, the task is one about which it is never possible to become complacent. The next horse examined could always be a first error, the animal that proves - as horses invariably do - that all humans are fallible. It is a thought that concerns professionals

in this sphere constantly, for there is always the threat of legal action against the individual who makes a mistake, and that is something no one can afford to forget.

The practice of soundness examination is an acquired speciality, for which conventional veterinary teaching is only a starting point. Soundness is a concept which involves many different specialist fields of veterinary medicine, from lameness to cardiology, respiratory disease to ophthalmology. But to say it is a concept is not to give it a mysticism, rather to declare that it is a discipline that involves every aspect of the horse from health to illness.

It is not uncommon to be presented with a horse and get an instant feeling that it is unsound, without knowing why. Inevitably, this suggests instinct, which is quite possibly the case. However, it would be wrong to imagine that such an instinct is naturally acquired, or comes without experience. Its acquisition is based on learning and experience, it necessarily takes time to acquire.

None of this is to suggest, of course, that a preliminary opinion is likely to affect the whole examination or the outcome, nor should it. Every horse is entitled to the benefit of the doubt - though this viewpoint will not please insurers and lawyers! It was R. H. Smythe who said '... it is as culpable to turn down a sound horse as to pass an unsound one'. In other words, it must not be rejected for any fault other than the possession of some basic defect that limits its future usefulness. It cannot be a whim, nor can it be something outside the animal's ambit. During an examination I once watched a gelding being bombarded by a swarm of bees. The animal was being lunged and was sweating, which may have been the attraction. Although the horse did not keep his temper, he was not rejected on account of losing it.

In any vetting it is possible that

blemishes of one kind or another will be unearthed. There may be mild respiratory disease, a lump on a bone, even a lesion on an eye. All of these things have to be detected and considered in the final decision. However, the mere presence of an unsoundness does not have to mean the end of the procedure, providing that particular problem is not going to limit the animal's usefulness, and is acceptable to the buyer. Of course its presence may have a bearing on price, but it is important to the outcome that all relevant facts be placed on the table. In this way, it is possible to be fair to both buyer and vendor, and, not least, to the horse.

Soundness examinations today are different from those of a few years ago, where the presence of a defined unsoundness - such as spavin, roaring, etc. - was enough to condemn an animal outright. The situation was cut and dried; the horse either passed or failed. This, however, led to such anomalies as 'has spavin but is otherwise sound'. Naturally, this was open to criticism and an unsatisfactory state of affairs. A horse could have had a bad heart and be otherwise sound, i.e. sound, except likely to drop dead!

Today the final interpretation is more broadly based, the decision reached is open to consultation with the buyer, negotiation with the seller, and, often, second opinion. The procedure, too, has taken on a new - though not totally different - face. It is defined in phases, with a set pattern to every stage. The form and wording of certificates have been standardised, especially in Britain. The old certificate - 'sound in eye, heart, wind and limb' - has gone, being replaced by a style that describes the defects found and expresses an opinion on the horse's suitability for the purpose for which it is being bought. Conditions which were formerly defined as unsound would not now preclude a sale as long as the buyer's intended use was not affected and the horse had a normal

life expectancy. In the USA, on the other hand, vets are advised to avoid commenting on the future use of a horse, simply to record any abnormality found on their certificate.

The tenor of the negotiation will differ depending on whether the purchase is made privately at home or in the yard of a public sales company. The principle difference is that a private sale is conducted with little pressure on time, whereas, in a sale yard, time, to quote from conditions of sale, 'is of the essence'. Everything tends to happen in the few moments a horse walks round the ring before the auctioneer. Heart-rates increase, mouths go dry, catalogues flicker in anxious anticipation.

People often buy in these circumstances without realising there are conditions of sale, without seeing evident blemishes which are clear in daylight, and without having read descriptions or warranties declared in the catalogue. They may be landed with an animal they do not want and which is not returnable under the conditions of that particular sale.

Many horses are taken to such places to be disposed of, maybe because of unsuitability or unsoundness, very often without guarantee or warranty, and a buyer has to act sharply and with the quick-wit of experience in order to avoid serious error. It only takes the flicker of an eyelid to buy, but it could take a long time to undo the trauma if the animal in question is flawed.

Even where post sale examination is allowed, that too is usually time-limited. If it is not possible to conduct this at the sale yard, there may be less than 48 hours in which to get the horse home, arrange for a vet, and report back to the sales company if it is to be returned. Many people do not start to suspect trouble in this time and may lose their chance altogether. Sometimes problems do not become evident for several days anyway, making for a very tight-scheduled operation.

In a private sale, on the other hand, there is seldom any rush, a trial may be given, and the possibility exists of taking more than one opinion on conformation and use (which may well be outside the ambit of veterinary examination). The negative side of this, of course, is that the price is dictated by the vendor and not by market forces.

Most private sales are conducted on the basis of *caveat emptor*, or buyer beware, which means that you buy at your own risk and with full responsibility for your judgements and decisions. Your protection is the contract you make with the vendor, the warranties on offer, and the opinion of the vet.

In public sales there is some protection provided by consumer laws. But if the particular sale is a dispersal ground for crows and rejects, anyone buying will have a searching task dividing the wheat from the chaff. There may be horses on view with pedigrees that cost vast sums to create, but their ignominious fall to such a lowly market may have been due to some serious defect. Just occasionally, however, a wonderful bargain is picked up and this is the stuff of dreams.

Vendors are individuals who are simply selling horses; they may be street-wise or innocent. Their aim will be to present and sell their animals for the best price the market will allow. They are restricted by law and conditions of sale from making false claims, issuing incorrect descriptions and offering warranties which will not hold up.

It is the vendor's responsibility to declare vices, failing which a horse can be returned at virtually all public sales, and many private ones too. The vet is not obliged to become involved in this; modern veterinary certificates advise that this is a matter between those involved in the sale.

It should be understood, however, that some horses exhibit mild vices at times of

stress, and can be returned because of them. They may not affect the animal's usefulness, and frequently only last until it has settled into its new home. Nevertheless, buyers have the right to return such animals, and frequently do; many people not being prepared to accept a horse with a vice under any circumstances.

Some sales companies stipulate pre-sale vetting as a condition when selling young and unbroken horses. This involves full examination for soundness of horses before they ever get to the sale. Its purpose is to eliminate those which are not sound before they enter the ring, or, if they are unsound, to ensure that this fact be known. It is a practice which makes eminent sense and it is to be hoped that no external pressures (mainly legal) will cause it to end.

Examination now is of a more defined nature, confined to the systems and organs which are readily accessible – basically eye, heart, wind, limb and all surfaces of the body. The examination only applies to the condition of the animal at the time it is carried out. All findings are recorded on the certificate.

The question of drugs arises too. A lame horse could easily have been given a drug to make it sound on the day of sale, and this would hardly be declared, or detected. Although blood samples are usually taken if there is suspicion, very

often the word of the vendor is requested, or written, and the honesty of the individual relied upon. It is a practice which is open to error.

As far as special procedures are concerned, these are generally carried out at the request of the buyer, or on the suggestion of the vet. They require the permission of the vendor. These tests may vary from radiography of joints and bones to endoscopy of the respiratory system, or scanning of internal and external organs for conditions as diverse as reproductive health in the mare or tendon injuries in competing horses. The implications for these will be discussed later (see Chapter 13).

The task, as already stated, is an onerous one, demanding not only experience and maturity on the part of the vet but also the ability to see through dishonesty and trickery and present a wholly objective opinion in the end which does justice to buyer, vendor and horse.

Veterinary examination for soundness is an essential aspect of virtually all horse sales now. Its importance is in fact growing as animals become more valuable and more people become horse owners. Its contribution to the whole horse industry should never be underestimated. Every buyer, in fact, either amateur or expert, can benefit from the information it provides.

Soundness in the Horse

First Impressions

For the purposes of this book, we shall take it that veterinary examinations for soundness occur in two primary situations only – in a private yard or at a public sale. The reason is that these venues are distinct and offer so many different parameters to the process as to be of major significance to the outcome. As far as possible, these differences will be clarified throughout the course of the book.

Purpose of Sale

Horses are bought and sold for a great number of reasons, though most commonly as a matter of commerce or in the pursuit of pleasure. There are those who make their living from breeding or dealing; professionals for whom love of an animal is tempered by the need to make money. Others buy only to race, or compete, whose own knowledge of the animal may be minimal, and who are paying for expertise in training or management to compensate for it. There are those who buy young horses to break and bring on with the hope of selling at a profit later, perhaps having first performed with them in competition. But others buy simply for the pleasure of ownership or the joy of leisure riding. There are, too, growing numbers of parents who buy ponies on which to teach their children to ride.

Vendors come in many guises, and can

be thoroughly genuine or may have an animal to sell that they are only too eager to be rid of. The simple answer to their problem may be to sell at a dispersal sale, as the horse stands, without guarantee or warranty. There may be no come-back once it is sold.

On the other hand, the intention may be genuine and the horse serviceable except, perhaps, for a minor blemish that does no one any harm. The vendor may wish to warrant the horse and get a good market value. It is now that trouble may start and there is a need to be fully aware of the implications of any guarantee or warranty. In a public sale, the conditions of sale must be known and obeyed. In a private sale, while terms of contract are different, warranties and descriptions are equally important and do have a bearing in law.

The Buyer

A buyer may want to have a horse vetted for soundness, and this is perfectly acceptable, almost essential in any private sale now, but, at a public sale, it may not be allowed. This will depend on the conditions under which the horse is sold.

In many purchases, the vet may be a stranger to the buyer. This can happen at a public sale or where a horse is being bought at a distance from the buyer's home. The terms of any business contract

with the vet are simple and usually defined in the instructions given before examination.

A vet should not, ideally, certify a horse that is changing hands except on behalf of a buyer. This is partly due to the influences of law and indemnity insurance but also involves the future use of the horse. Only the buyer knows the intended future purpose and the vet's examination may be pointless without this information. On the one hand, a buyer merely looking for a riding horse that will be subjected to only the lightest exercise might not require that animal to be fully sound; but it will have to be able to perform to the standard required. On the other, a pony for children's competition will have to be fully sound, as will any animal for other forms of competition, including racing.

A vendor may even produce a certificate of soundness carried out by his own vet. Beware of this and it is a false economy to accept such a certificate when buying any horse. For a start, if it is to be accepted, it should be dated within days of the sale – a month would be too much. Secondly, the suspicion has to exist when a horse is presented with such a certificate that something is being hidden.

The vet's responsibility, generally, is to be impartial in making a judgement. Nothing material to the examination can be hidden and where a buyer has reason to believe that a vet may be in a compromising position it is better to go elsewhere for advice.

The Vendor

The vendor is usually just an individual who is disposing of a horse. However, there are inevitable differences between a housewife selling a child's pony, a dealer, and a professional breeder. It is important to the buyer to know the reason for selling

and to learn, as far as possible, the long-term history of the horse.

Vendor's Certificates

The vendor should only produce a certificate in two situations. First, a pre-sale certificate may be essential as a condition of certain public sales. The animal will then normally be subjected to a second examination by a member of the veterinary panel of the sales company. The horse is sold on the basis of these examinations and is not returnable after fall of hammer except for proscribed vices which materialise in the week after sale.

Secondly, a certificate would properly be produced to cover a known problem which is being declared, such as an eye lesion or heart murmur. There is nothing wrong with declaring the existence of such a problem and presenting an expert opinion to define its significance and future influence on the horse's usefulness. Such a certificate may materially affect the sale price and is an insurance for a vendor when accepted. Even where a horse is not adversely affected by the problem declared, it could cause it to be rejected on veterinary examination after sale. The vendor is simply protecting a financial interest. This would not exclude examination of the horse after sale – depending on sale conditions. In a private sale, that prerogative would also exist, or the horse need not be bought.

Conditions of sale and the legal implications for buyer and seller will be discussed later. In the meantime, it is provident to begin the examination.

First Approach

In a private sale, a horse is normally seen

in its natural home, or in a yard where it is kept at livery. While it is natural for a vendor, or agent, to know in advance the time of the vet's arrival, and ensure the animal is in a presentable state for examination, the vet will take note from the start of all relevant details. Some vets deliberately arrive early, but a vendor with something to hide will always anticipate this and act first.

Special features of interest will be the attitude **of the horse when first** approached, and any evidence of disease or vice which might be learned from the environment. In particular, the state of the stable, e.g. box-walking tracks; evidence of wood being eaten from doors and surrounds; bedding being of a nature that might suggest chronic lung problems – paper or shavings – and if there are any anti-weaving or crib-biting measures evident. I once owned a gelding that took to kicking walls to such an extent that he was in danger of injuring himself. The cure was simple, however, we carpeted the walls; once he could not hear the noise made, he gave it up.

Head-shaking may be noted at this time, or later. It is a problem that is sometimes associated with the vertebrae and nerves of the neck, and it is unlikely that any horse so afflicted would be passed sound. It may also occur as a result of other irritations, such as allergic rhinitis (inflammation of the nasal passages) which is considered the most common cause. It could, in theory, result from any irritation in the region of the head and neck. In each case the underlying cause will have to be found and judgement based on the likely long-term effect on the animal.

Of course, it may not be possible to tell if a horse has been moved from its own everyday stable to hide any tell-tale facts; still there may be a suspicion that things are not as they should be. However, the vet's commission is to find any defect with

the unerring persistence of a Holmes, or a Columbo, and, given the pressures to provide an opinion which will not eventually result in litigation, the chances are that this purpose will prevail.

Presentation of the Horse

It is important from the outset that the animal be presented in a relaxed state. That is to say, it should not be just in from the field, nor should it have been recently ridden, and it is preferable if it has not been excited by even routine events in a busy yard. Even though this cannot always be avoided, the ideal is that the animal be free of any stimulus that might cause a release of adrenalin and affect its heart prior to examination. This could easily affect the interpretation of murmurs, and might go against the horse if the sound of any murmur found were accentuated. Also it should not have had exercise that might hide other problems.

Few vets will entertain examining a horse that is not housed, as not only is it impossible to make critical decisions about heart and lungs, but the eyes cannot be properly examined in daylight and certain forms of lameness are less likely to be detected when an animal is warmed up. The danger to the vendor is that, if there is doubt as to whether or not there is disease, the animal may be rejected as unsound, or the vet may refuse to continue the examination in those circumstances.

I have only once been presented with a horse to examine where there was no stable or any alternative building in which to begin the procedure. Although it caused a furious row, I refused even to commence the examination. While there may be occasional circumstances where accommodation can be found, there is a natural reluctance to write a certificate

where the routine procedure is not followed. The final opinion is too important to leave room for error.

In these cases, the vendor (who alone is responsible for providing the facilities) is the one who, ultimately, suffers.

Stance and Balance

On first approaching the horse in the stable, especially as the vendor, or groom, enters and catches it, head carriage is observed, and can indicate problems of vision or balance. All reactions at this stage are important and even the way a horse moves in the first short steps it takes may be vital to the ultimate decision reached.

The vet will watch how the animal is standing when approached, and whether there is any indication of a stance that might be caused by lameness. It is particu-

larly important to see how each limb is bearing weight, if there is any pointing of a toe (Figure 1.1), or if the feet stand behind a straight bearing line to lessen pressure on the heels. Also of interest will be any abnormal movement of the feet as it moves over; movements that might indicate pain or restriction from injured ligaments or muscles.

With regard to head carriage and vision, I recall a horse – the winner of numerous National Hunt races in Ireland in the late 1970s – that I had known from the time he was born during the course of a virus outbreak in my area. At birth, the young colt showed severe yellowing of his mucous membranes and was passing urine the colour of stale blood. In addition, he almost drowned in a pond of water when only a few hours old. However, despite these setbacks, he was nothing if not resilient and never appeared in the least bit sick. More to the point, he struggled excessively when getting his pefi-natal

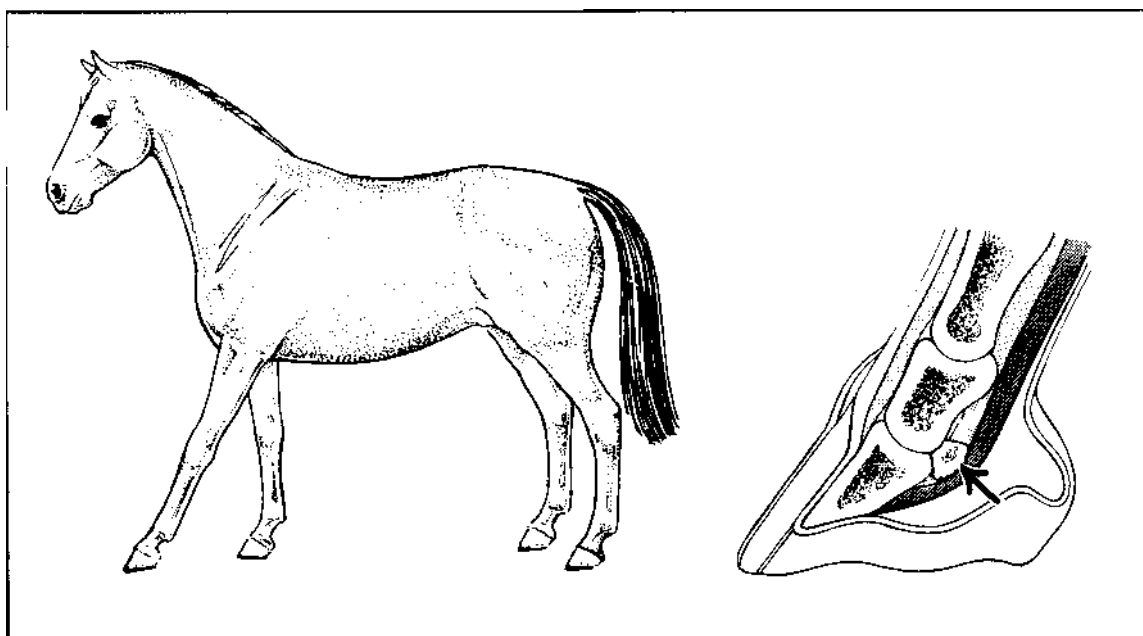


Figure 1.1 Resting stance in navicular disease; 'pointing' the foot (left). This condition involves pathology of the navicular bone (right, arrowed)

injections, making me wonder subsequently if I had touched a nerve with the needle in the process.

When he matured, a big horse with a slightly dipped back, he was taken to sales and presented as an unbroken three-year-old, sold in the ring, but rejected by the buyer later as being blind! This conclusion was reached because the horse always held his head at an angle when first exposed to bright light at a stable door. The buyer, seeing this, would not take him under any circumstances, yet no examination ever exposed any abnormality of his eyes and there was never a suspicion of defective vision. A wonderful jumper, he was returned to his owner, whom he rewarded by winning at least eight races.

The Horse's Reactions to the Handler

Note is taken of the way the horse reacts to its handler, how it accepts the head-collar and how willing it is to be caught. Occasionally, abnormalities of the nervous system will expose themselves at this point (represented by false movements or lost balance) and any tell-tale signs should be noted and kept in mind for further investigation. However, if any sign suggests gross impairment - if a horse stumbles, a leg shivers, or a stifle locks - the examination could end immediately. In order to be assured that the problem is a true reflection of disease and not simply a correcting movement which is imperfectly performed, the horse may be turned again in the stable, or taken outside to be trotted for added confirmation of these suspicions. If something is evidently wrong, the examination will be ended without further ado. This is not just a question of saving time, but could be done to ensure the horse did not injure itself in the course

of examination. However, if it is only a suspicion, it may be decided to examine heart and eyes before leaving the stable, the fault being noted for further investigation outside.

Temperament

Temperament will be of interest from the start, and no animal that shows itself to be nappy, bad-tempered, or dangerous will impress a vet or prospective buyer. A horse may be rejected on these grounds, though it may be a matter to be discussed between vet and buyer, who can then decide whether or not to buy in any case. If an animal is intractable, or so dangerous as not to be capable of being handled with safety, the vet has the right to withdraw services and conclude the examination without reference to the buyer.

This may happen at public sales, because horses being pulled out repeatedly for inspection can become tired and irritable, and who can blame them? Perhaps the animal in question is normally amenable, its resentment aroused only by an ill-judged approach. It is natural in the circumstances that it be given time to return to normal, although some will argue otherwise. Sometimes these problems arise from bad training, or can reflect the natural temperament of an individual animal. But an owner has a responsibility to advise both buyer and vet if an animal is dangerous; just as anyone approaching a horse for sale has a need to be quiet and confident and ensure that nothing untoward causes excitement, or provokes undue resistance.

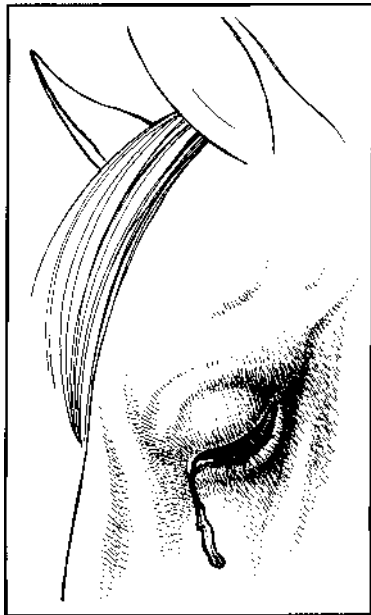
Horses tend to know automatically whether a stranger is a friend or not, and react accordingly. Most, happily, are reassured if the approach is pleasant and not too noisy or rough. Some badly handled animals show their resentment by sticking

their ears back or biting, and may even kick an intruder out the door. Thankfully this does not happen too often, because most horses are well-mannered and receive visitors on genial or welcoming terms.

Visible Discharges

At this time also, note is made of any discharge from eye or nose, although knowing vendors will have made every effort to have these cleaned off in advance. Still, there may be signs of discharged pus or mucus on the walls, on the feed-trough, or at the door. A tract from tear-staining could exist beneath the inner canthus of the eye (Figure 1.2).

Figure 1.2
*Discharge
from the inner
canthus of the
eye*



Breathing

The rate and character of breathing will be of interest here, although the respiratory

system will get a great deal of attention throughout the course of the whole examination. The normal resting respiratory rate is in the region of 8-12 per minute and the normal character of breathing is smooth and rhythmical with a natural pause between succeeding breaths.

Further evidence of respiratory trouble might be suggested if the horse is being fed damped hay, and if the hay is being fed off the floor. However, the latter could simply mean that there are no hay-racks or nets, and is seen in many stables without any suggestion of abnormality in the animal so fed.

General Health

It is essential to gauge the general signs of health and demeanour, and wise to check if a horse has eaten up, and is drinking normally (though this information is not always available, especially where there are automatic drinking bowls). The colour and texture of the coat will be observed, as well as physical condition, alertness, absence of any lassitude or overt illness. Dead or standing coats may indicate disease, bald patches may have been caused by external parasites.

The colour and consistency of droppings are also of interest, especially when indicating diarrhoea or constipation. While these signs might only reflect feeding or management style, they can also be an indicator of digestive health and whether the animal is likely to have a mildly toxic condition or be suffering from low-grade enteritis or worms. It is not unusual to find horses suffering from these types of condition without gross external signs of illness.

Clinical health is a critical part of soundness examination and will be of great concern. Inevitably if any infectious disease is found, it can influence the final

decision on sale. Some virus diseases are extremely mild, described as sub-clinical in effect; and it is occasionally possible to overlook their significance. Where the influence of infection is greater, the examination is properly postponed. If there are signs of lassitude and the horse was found to have a temperature, the examination would end immediately – though it is unlikely any such animal would be presented for examination. The point is that there are degrees of illness and an animal may be in the early stages of disease and its owner may not know.

If an animal is suffering from low-grade pneumonia (which may be localised and not have been noticed by the vendor), chronic obstructive pulmonary disease (COPD), or even a mild toxic condition of the bowel (which is also common and very often sub-clinical), these will have to be taken into account and the examination may be ended there and then if seen fit. Alternatively, if the condition is not considered quite so serious, the subject will be a matter for discussion between buyer and vet as a first priority.

Infectious Disease

The whole area of infectious disease is in need of a more responsible attitude when horses are brought into any public sphere. Some sales companies define infection as a cause for eliminating horses from a sale – though they may not always exercise this option in practice. For all events under Federation Equestre Internationale (FEI) regulations, there is an onus on examining vets to detect and eliminate horses which are suffering from infection. Yet, while there is an option under the rules of racing for veterinary examination, horses are generally allowed onto racecourses in Britain without inspection, even when coming from known infected yards; the

only stipulation being that they are vaccinated against influenza. There is a warning (under the rules of racing) against trainers bringing horses to race meetings which are suffering from infectious diseases, but the reality is that many bring home infection from just this source.

Skin Conditions

Skin conditions are significant in soundness because of being infectious or cancerous, or by acting as a nuisance through situation.

Sarcoids

These are skin tumours which appear on the insides of the hind legs, the sheath and udder, on the abdomen (Figure 1.3)

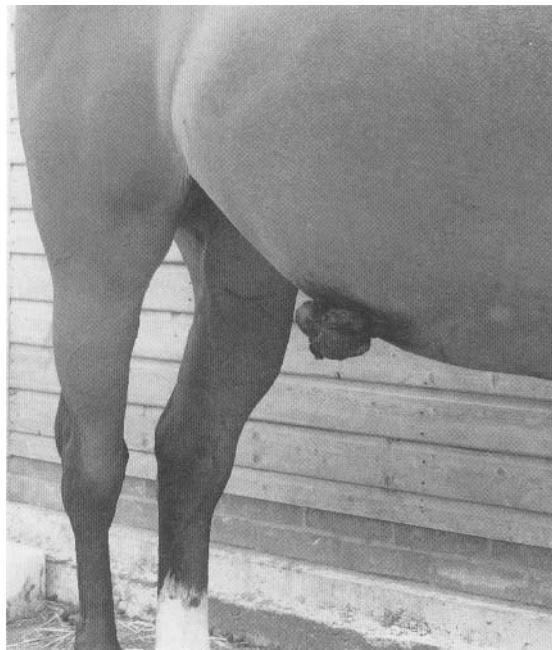


Figure 1.3 A large sarcoid

and flank, the lower part of the chest, and less often on the head and shoulders. They are firm and fibrous to the touch and vary in size from that of a wart to 10 cm (4 in) across, or more. They are normally benign growths but have the propensity for regrowth.

When sarcoids are located where they are likely to cause problems – e.g. under the girth or saddle, on the udder of a broodmare or penis of a stallion – it is usual to remove them. Modern surgical techniques, including cryosurgery, are fairly successful in dealing with the problem. The presence of a sarcoid may not deter some buyers.

Melanoma

This is the common skin growth seen in grey horses, which may be benign or malignant (Figure 1.4). Melanomas tend to develop with age and are unusual in horses under five or six years of age. As they get older, a high percentage of grey horses are affected.

These tumours can grow on any part of the body, but are most common in the region of the perineum. They can be multiple, firm to handle and vary in size. Bigger growths may have ulcers on their surface.

While surgery is often performed if a growth is causing a distinct problem, there is a tendency to regrowth. Furthermore, melanomas are often found on sites where they are unsuited to surgical removal.

Most benign melanomas on grey animals are left untreated.

Warts

Warts, also called papillomas, are most commonly seen about the nose and lips of



Figure 1.4 *Melanomas on a male horse*

horses. They are caused by a virus and the disease is self-limiting in so much as the warts usually disappear within a matter of months of appearing. They leave no scar and normally do not require surgical removal.

Opinion

Sarcoids have to be mentioned on a certificate. It is generally incumbent on a vendor to declare the presence of sarcoids (or any known defect) if aware of them. From a practical point of view, they are treated with relative success today and generally, while unsightly, do not affect the future usefulness of an animal or its prospective lifespan. While they may become very extensive, they are more of a nuisance than an unsoundness (depending on extent and location). They are particularly

troublesome on the sheath and chest area of stallions, and on the mammary area of suckling mares where they can pose a serious problem. They are also a considerable nuisance in the girth or saddle areas, on the eyelids, or anywhere where they might be interfered with by riding tack. Sarcoids are not readily transmitted from animal to animal.

Melanomas in grey horses are of a similar nature clinically and must be mentioned on a certificate. In older horses with considerable tumour development, the animal is best rejected. It is not uncommon to find proliferations of melanomas in the perineum under the tail and they are very common in grey mares as they get older. Their presence is significant and they can affect the animal's ability to breed. They may be disregarded – say in the case of a very desirable dam – though it should be appreciated that, as well as influencing breeding, if they become malignant, melanomas can shorten the lifespan of the mare.

Melanomas in the region of the head are viewed with reservation, especially over the veins and arteries of the upper neck. Squamous cell carcinoma is a common tumour of the skin in some parts of the world, capable of being very invasive.

Infectious Lesions on the Skin

Lesions of infectious skin diseases, such as ringworm (Figure 1.5) would call for immediate suspension of an examination, unless evidence could be produced to certify that laboratory tests taken from the area indicated it was not infectious or that the lesion was in a post-infection stage. The same would apply to lice or mange.

It might also apply to conditions such as mud rash (Figure 1.6), common in wet or unhygienic conditions, or in sweet itch (Figure 1.7).



Figure 1.5 *Ringworm lesions are highly infectious when active. Signs may remain for some time after effective treatment*



Figure 1.6 *Mud rash*



Figure 1.7 Sweet itch. Note the thickening and ridging of the skin at the base of the mane

Sweet itch is caused by an allergy to biting flies and may be a persistent problem, especially in ponies. Its presence is evident except in winter months. The condition will influence value, and may prevent a sale, and must be declared by the vendor.

Early Termination

It should be clear by now that many soundness examinations end almost before they start for various reasons. If the horse had just been exercised and was sweating, this could well cause it to be postponed or ended early. A prominent heart murmur, or serious eye defect, would certainly bring it to a premature end. The most common cause, however, would be because an animal was lame. Other causes would be: a temperature; a lesion such as a saddle gall which would

prevent a ridden horse from being tried under saddle; or heat in a joint or tendon.

In a Sale Yard

The approach to vetting horses at sales (Figure 1.8) is influenced by three major factors:

1. The horse is not in its natural surroundings.
2. It may not be fully relaxed.
3. It may have been recently exercised.

The manner in which examinations are carried out at sales today attempts to overcome these deficiencies.

The fact that the horse is not in its own stable makes it all the more important that warranties regarding vices are covered either by the conditions of sale or given directly by the vendor. These are not included in the veterinary certificate.

Conditions of sale generally specify that a veterinary examination of soundness is only valid for the time of examination and carries no warranty thereafter.

At a sale yard, there is no scope for delay, generally, and the animal is passed or rejected on the basis of opinion available at the time of examination. In such a situation, a vendor might well have precluded the possibility of rejection by having a known lesion examined beforehand by an expert. This opinion, expressed on a certificate, can then be presented to the sales company in advance. It will stand as a declaration of the existence of the lesion.

However, auctioneers have a predilection for misinterpreting certificates and it is not unknown for a perfectly presented certificate to be so badly announced that it has the effect of frightening potential buyers off.

Also, once a condition is declared in this way, it is not warranted – unless this is specifically stated. A buyer may accept the



Figure 1.8 At a sale yard, a horse might be presented for veterinary inspection with plaited mane and in a double bridle

opinion presented, or have the right to another. Generally, anyway, the problem would not be declared if the animal was believed to be unsound. Besides, a buyer can refuse to bid on an animal when con-

sidering any blemish to be undesirable.

Where a vet detects such a lesion when examining on behalf of a buyer, a second opinion can usually be obtained if there is doubt as to its significance.

The Heart and Eye

These two organs are routinely evaluated at this point in the examination.

Anatomy of the Heart

The horse's heart (Figure 2.1) is a hollow muscular pump, situated within the chest cavity and positioned between the lungs, with the greater part of its weight directed to the left side. It is suspended in a smooth, lined sac (the pericardium) which

prevents it from being over distended. Its function is to pump blood brought to it by the veins into the lungs (the pulmonary circulation, where oxygen is taken up and carbon dioxide released); and pump the oxygenated blood returning from the lungs to the muscles and other tissues (the systemic circulation) (Figure 2.2).

To perform these functions, the heart has four chambers: two small chambers (the right and left atria) are situated at the top of the heart; below, and separated from these by a fibrous band, are two

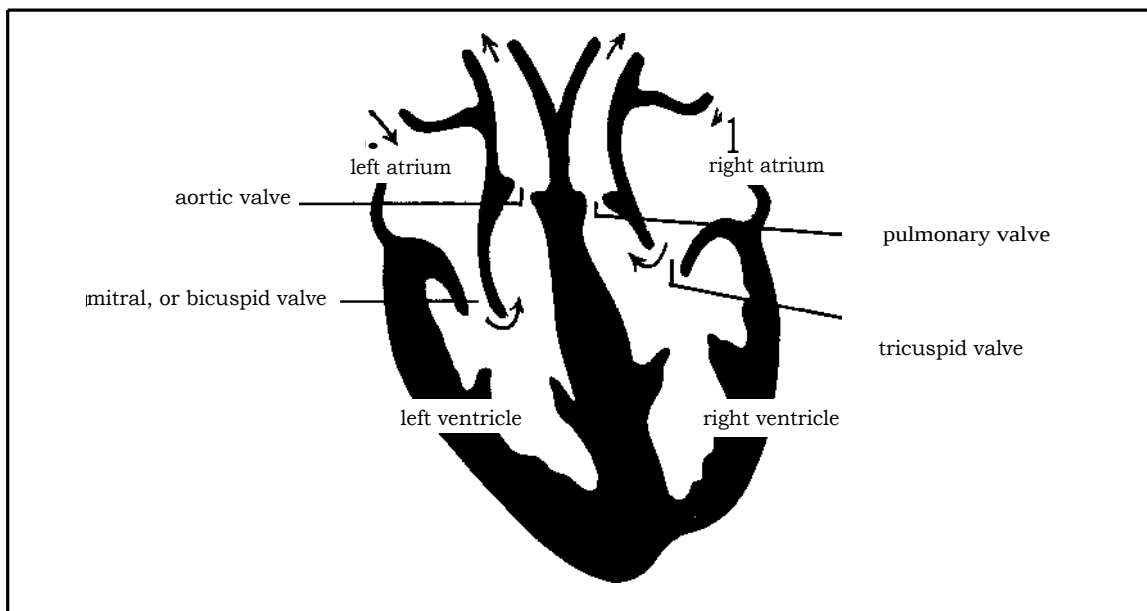


Figure 2.1 *Cross-section of the heart: the left ventricle is more muscular than the right*

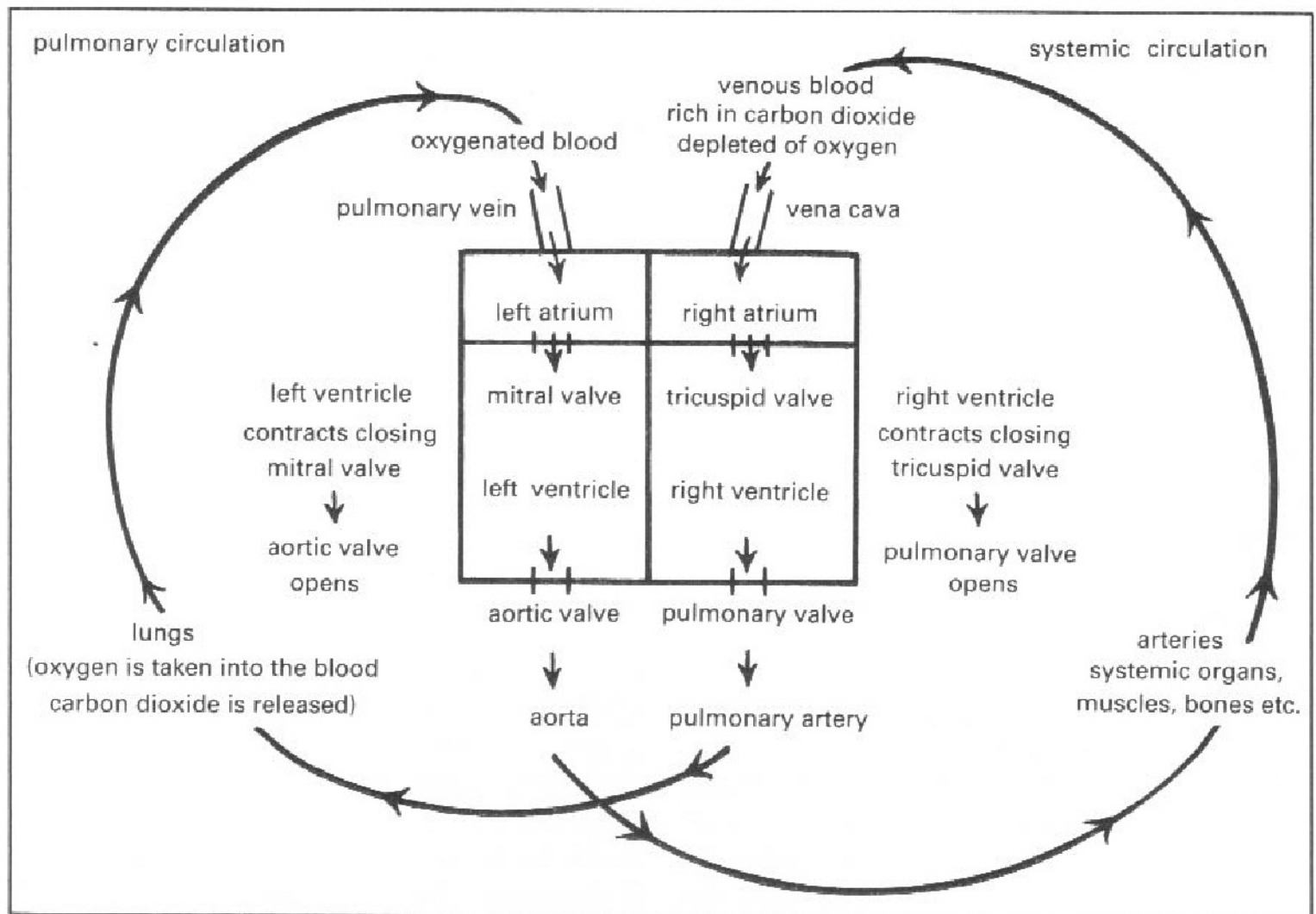


Figure 2.2 *The circulatory system*

larger chambers (the right and left ventricles).

To ensure a one-way flow of blood through the heart, there are four heart valves anchored to this fibrous band. Each ventricle has two valves, one sited at the entrance and the other at the exit; there are, thus, two valves in each side of the heart. On the right side, the tricuspid valve (this has three flaps, or cusps) guards the entrance between the right atrium and the right ventricle; and the pulmonary valve (with three moon-shaped cusps) guards the exit between the right ventricle and pulmonary artery. On the left side, the mitral valve (shaped like a bishop's mitre, having two cusps) guards the entrance between the left atrium and

left ventricle; and the aortic valve (with three half-moon-shaped, or semilunar, cusps) guards the exit between the left ventricle and the aorta, the largest artery in the body.

Heart Sounds

In the normal equine heart, with each heart beat, four heart sounds are produced (although all four sounds may not be audible in every horse). The two main sounds (referred to as lubb – dup) should be audible in every horse at rest. The lubb sound is associated with closure of the mitral and tricuspid valves while the dup

scund is associated with closure of the aortic and pulmonary valves.

Murmurs

A murmur is a relatively common occurrence in the horse. It is a prolonged sound and is audible in the normally silent periods between heart sounds. Murmurs are ascribed to eddycurrents or turbulent blood flow in or near the heart sound. They may be quite loud or barely audible, persistent or transient. From a clinical viewpoint, they may be benign or pathological.

In general (but not invariably) the louder the heart murmur the greater its significance.

It is common knowledge that some horses with prominent murmurs perform exceptionally well, making it important that when a murmur is discovered a full clinical assessment be made in order to gauge its significance. Murmurs may be associated with varying grades of anaemia and with infection. They may also be detected during colic attacks (or any other situation that imposes a major stress on the circulation); frequently these will disappear when the animal has recovered.

The significance of a murmur depends on many factors, including age. Within the first 83 hours of life a murmur may be heard in a normal foal. If it persists beyond four days it may be a sign of a heart or blood vessel deformity.

When a murmur is first detected in a two-year-old or three-year-old horse this does not necessarily mean the animal will soon be an invalid. In such cases an examining vet may advise a full heart examination, involving an electrocardiogram (ECG) (mainly to determine heart rhythm) and an echocardiogram (if the facility is available).

An echocardiogram provides a picture of the heart beating and of the valves

opening and closing. If on such an examination no significant changes can be detected there is then a possibility that the heart will compensate and that the horse may perform satisfactorily for an indefinite period. It is, however, advisable to have the heart checked regularly thereafter, especially if the animal shows signs of undue distress during exercise.

Some quite loud murmurs disappear spontaneously at a later time, even within a period of six weeks. This makes important the identification of the murmur and that its clinical significance be critically assessed.

I recently examined a gelding which had been rejected on examination because of a murmur, the previous day. However, on the day I examined him, it was not detectable. When he subsequently got a foot infection it became audible again, and disappeared when the infection cleared up. This particular murmur was not significant and he was subsequently sold sound. It certainly did not impede performance because he was very successful. However, word was about that he had been spun (or rejected) for an unsound heart and it was harder to eliminate the rumour than it was to assess the murmur, consequently it affected his value.

Dropped Beats

Prior to each heart beat an electrical signal is generated in the upper portion of the heart (the right atrium). This signal passes over the entire heart and causes the four chambers to contract. The two atria contract first and then after a short delay the ventricles contract. Quite commonly, however, this signal in the horse fails to reach the ventricles and the heart skips a beat. This phenomenon is referred to as dropped beats, intermittency, or A-V heart block. In many cases it is a relatively benign condition but occasionally it may

be indicative of a more serious problem, namely atrial fibrillation. This latter condition is one in which the electrical activity in the atria has gone completely wrong producing a grossly irregular heart rhythm. An ECG may be required to differentiate between the two, but more often than not an examining vet will be able to distinguish between them simply by listening to the heart.

In many horses the dropped beat occurs because of an excessive slowing influence by one of the nerves supplying the heart. This may be a benign response to the animal's arterial blood pressure or it may be the aftermath of infection.

Many horses drop beats at rest and while this is not necessarily serious there is no proof, on the other hand, that it indicates exceptional fitness or athletic reserve, as has sometimes been suggested. In my experience, the heart reflects the total body health of a trained horse and criteria such as the strength and rhythm of the resting heart sounds are an excellent indicator of performance expectations. It has never been my impression that dropped beats (at their most innocent) indicate anything less than mild conduction problems in the resting heart (and are therefore marginally clinical). More serious conduction problems are potentially life-threatening. Those that disappear with exercise are mostly not significant for soundness purposes.

Horses I have examined before they won races (where it was possible to safely predict they would run to form) have never been presented dropping beats, making me believe the problem is always on the margins of being clinical. However, if they disappear after even a short trot, it is safe to say they are hardly life-threatening, but they do not indicate cardiac strength. Where they appear temporarily, they can indicate active infection, and in those circumstances should be a warning that the horse is not healthy.

It is only right to point out that some of the opinions expressed in the last two paragraphs are not standard veterinary teaching but have emerged from more than 20 years of private work. They began from the idea that the heart responds to all internal changes and that, if properly interpreted, such changes could be a means of predicting performance in competing or racing animals. Experience has proven this supposition to be correct, though it is not a simple matter that just anyone could undertake overnight.

Heart Rate

Progressing from rest to maximum exercise the heart rate in the horse can accelerate from about 30 to 230 beats per minute. The normal resting rate of an athletic horse varies from about 28 to 45 beats per minute, the rate being counted either from the pulse or from the beats at the left side of the chest. Very fit animals may have a normal resting rate in the mid 20s. A resting rate of 56 beats per minute eliminates animals from starting in driving events. A persistent heart rate of 60 beats per minute in an adult horse at rest and completely relaxed may be a sign of heart failure.

Interpretation

As stated, it is important when the heart is being examined that the horse is relaxed and free from any external stimulation that might excite it. Some murmurs are particularly noticeable when the rate of beat is slow and the animal is tranquil, but may disappear under even marginal excitement. In my view, it is not the intensity of the murmur that is always significant but the influence it has on heart response to exercise and the stage of the heart cycle at which it is heard. In other

words, a soft sighing-type of murmur (as occurs with a leaking aortic valve) would be more important to the horse's future than a loud blowing systolic murmur that disappeared quickly and did not affect performance.

Abnormalities of beat pattern have to be taken into consideration and gauged on whether or not they disappear with exercise, and if they influence the normal return of the heart to a resting rate after exercise.

The basic concern here is competence to cope with the work imposed by exercise. If the condition is sufficiently serious, as with atrial fibrillation, the examination would be stopped and the horse rejected.

If beats are dropped with regularity, but disappear on exercise, and the indications are that the heart is strong, the procedure is continued, but the heart will be monitored with care at all later stages. It is also important that both sides of the chest are auscultated (listened to).

I once owned a show-jumper that had a most irregular heart pattern at rest. In fact it was so bizarre that the horse was refused entry to a county show with the gloomy prediction that he was likely to drop dead at any moment. Nothing could have been further from the truth. The horse competed well and was subsequently passed sound after electrocardiography performed by one of the most experienced authorities on the subject.

Factors Affecting Heart Action

The heart is influenced by many factors. It may be stimulated by fear or by a sudden need to prepare for flight – as when, in the wild state, a predator approached. Alternatively, it may be obliged to respond to sudden internal dynamic factors, like a major loss of blood, a lack of oxygen,

or even, more gradually, by the effects of dehydration or infection.

Effects of Heart Disease

If there is significant heart disease, a horse will generally show signs of ill-health and lassitude. Mucous membranes may become dark and congested. There may also be a cough and, in serious cases, a straw-coloured nasal discharge due to fluid-filled lungs.

The respiratory rate tends to be increased and an increased respiratory effort may be evident. There may be a notable jugular pulse and the pulse or heart rate may be rapid and regular, or irregular. The heart sounds may be pronounced or muffled, or distinctly soft.

The Stethoscope

For this part of the examination the vet will want complete quiet and will use a stethoscope which will provide good conduction of the heart sounds. While various electronic listening devices are available, it is a criticism of these that they amplify extraneous sounds and offer no real advantage over a well-made stethoscope. When examining horses, I have found that rubber tubing is preferable to plastic and that quality of stethoscope is the essence of well-judged opinion.

Electrocardiography

It is possible that any heart showing signs of abnormality can be further assessed using ECG, and when possible echocardiography. These provide further information on the soundness of the heart which can be of use at the time of sale or purchase.

A vendor, in possession of documented

evidence of a normal ECG and a normal echocardiogram, may ensure a sale where this was not otherwise likely. A buyer, wanting a particular animal, might be reassured if the result of these examinations were favourable.

When the heart and lungs have been listened to at rest the eyes are examined.

Anatomy of the Eye

Looking at the eye (Figure 2.3), we can first see the cornea at the front of the eyeball, a transparent layer through which light passes. In the horse it is oval, being wider in its transverse diameter. It is fitted into the white outer layer, the sclera, just as a watchglass fits into a watch. Through the cornea the pigmented iris is visible. It is usually in the form of a dark brown curtain, sometimes nearly black, but in some odd-coloured horses, it may be partly or wholly white. A variable aperture is located in the centre of the iris known as the pupil. In horses over four years old this is oval, but in younger animals it is usually rounded. At the upper border of

the pupil note should be made of several black hanging bodies with probably a few more projecting upwards from the lower border, the *corpora nigra*. Sometimes these are so numerous they appear to occlude the pupil. They undoubtedly act in some way to cut down the light entering the eye, but their real purpose is somewhat obscure.

The deeper structures of the eye are not readily seen on external examination. They are therefore not accessible except with the aid of an ophthalmoscope.

The upper and lower eyelids surround and enclose the eye, acting as moveable curtains protecting the front of the eye, the upper being larger and thicker than the lower. Opening and closing the eye (Figure 2.4) is performed by the upper eyelid while the lower remains more or less stationary. The inner surface of each lid is lined with a thin, moist, sensitive membrane known as the conjunctiva, which is moulded to move freely over the eyeball. The conjunctiva is continuous with the outer surface of the cornea, the transparent window at the front of the eye.

The third eyelid, or *membrana nictitans*, lies at the inner angle of the eye with its

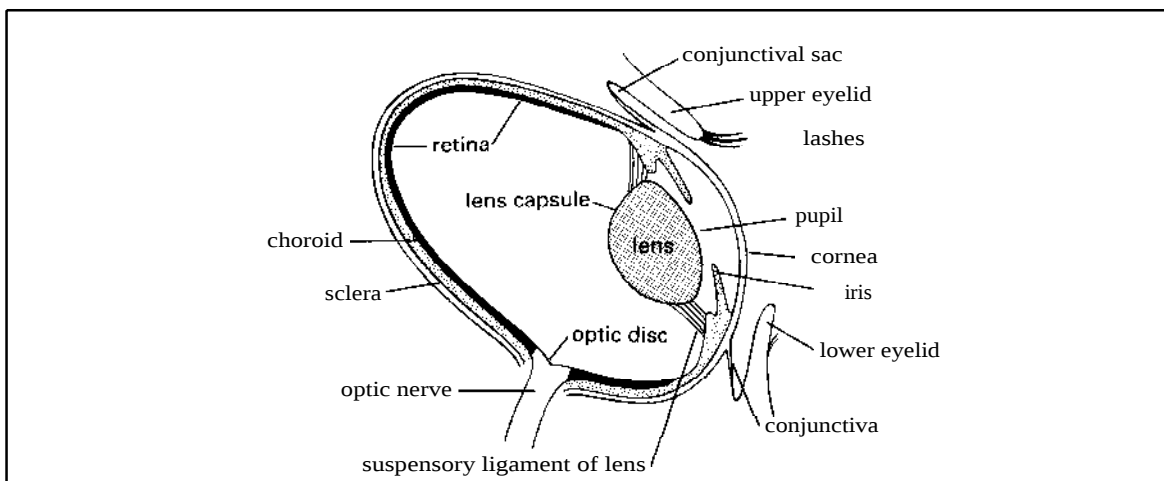
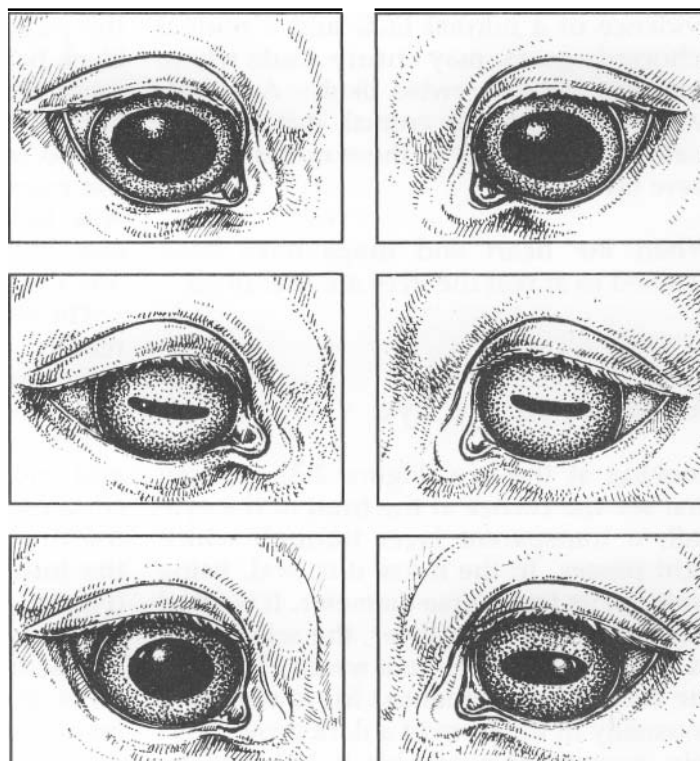


Figure 2.3 Cross-section of the eye

Figure 2.4 Opening and closing of the eyes occurs naturally; the pupils constrict in bright light, and dilate in darkness. The three pairs of eyes show: (top) normal eyes, dilated pupils; (centre) normal eyes, contracted pupils; (bottom) abnormal aperture marked by unequal size of pupils



free edge just visible. This eyelid passes across the surface if pressure is placed on the eyeball through partly closed lids. It acts as a shield as well as a type of screen-wiper, lifting foreign materials off the sensitive cornea (Figure 2.5).

In cases of tetanus, the third eyelid remains raised and almost covering the

eyeball. This is one of the most diagnostic signs of the disease.

Vision

The orbits, containing the horse's eyeballs, are not placed frontally as in man but lie on either side of the forehead. The eyes therefore are directed a little obliquely and do not converge upon objects lying straight ahead without some effort.

Horses, unlike ourselves, do not have a spherical eyeball but one which is somewhat flattened from front to back. Also the lower part is more flattened than the upper. Therefore the retinal layer (upon which the image is focused) is closer to the lens at the bottom than at the top. This means that both near and far objects can be in focus together.

Figure 2.5 The normal eye (right) and (bottom) the eye showing the third eyelid extruded



Although the horse has a reasonably well developed ciliary muscle the lens is non-elastic, which means that focusing is not brought about by the same mechanism as in man. In the human eye this ciliary muscle alters the shape of the elastic lens in order to focus the image on the retina. The horse must utilise movements of the head, either up or down, in order to bring the image onto that part of the retina at the right distance to ensure sharpness of image. It is probably aided in this by movements back and forth of the lens as a whole brought about by the ciliary muscles.

It is easy to tell when a horse is looking straight ahead because the two ears are pricked and the head is held fairly high with the line of the forehead and nasal bones almost vertically placed – at any other time each of the eyes will discern a different picture of objects placed laterally.

Opinion

The purpose of the ophthalmoscope is to allow inspection of the inside of the eye under the beam of a small light contained in its head. Various lenses are available on the circumference of the head piece to suit the focus of the examiner's eye and the object itself – the eye. The horse is examined in darkness – usually a darkened stable – so that the pupil will dilate and allow maximum vision of the inner eye structures. When exposed to direct sunlight the pupils contract and then it is more difficult to see through to the retina.

It is part of the eye examination to gauge this process and ensure that the pupils can in fact open and contract and that there are no adhesions present which might prevent either effect. This is done while exposing the horse to direct daylight after darkness and watching the pupils contract under its influence.

Inevitably, the eyes are vital to the well-

being, or value, of a ridden horse. Any lesion that interferes with vision or is likely to do so in the future has to be mentioned in a certificate and is likely to amount to unsoundness in itself. However, scarring (Figure 2.6) from old injuries might only constitute a limited blemish and may be acceptable in an animal that is performing well, as long as there is no risk the condition might deteriorate in the future. The decision on this will depend on the particular animal, the opinion of the examiner, and the mind of the purchaser, and, quite possibly, the evidence provided by the vendor. It may be possible to associate the scarring with an earlier injury; it could conceivably have been due to a thorn prick.

I have seen horses with very bad eyes competing over jumps, and still winning. One excellent show-jumper was blind in one eye and had only partial sight in the



Figure 2.6 *Close-up of a horse's eye showing a blurred patch near the lower eyelid indicating scarring.*

other. Inevitably, he was not sound for sale purposes, but it did not stop him winning.

In many cases horses are condemned for eye lesions which are not of clinical significance, not progressive, and which do not limit usefulness. While the presence of these may influence value for sale purposes, they may never inhibit performance and as such are only marginally significant in soundness. When in doubt, such an animal can always be referred for expert opinion and the sale made dependent on this.

Factors Affecting Soundness of the Eye

1. Evident scarring or clouding of the surface of the cornea is significant and, if extensive and visible superficially, will affect value and prospects of future sale. On the other hand, if the animal is being sold on the basis of ability, the lesion may not seriously influence sight and may amount to no more than a blemish.
2. Note is taken of opacities of the lens, i.e. cataract. Any cataract development is significant and will affect soundness, and, very probably, the future value of a horse. It might not limit the usefulness of a good performer, especially if confined to one eye, but the presence of such a lesion will always influence a later sale. If the horse is likely to be kept for its active life, then a decision can be made in a different light.
3. It is important to observe contraction and dilatation of the pupils. If this does not occur evenly in both eyes under the same conditions, or if there is an evident inability of the pupil to increase its size in dark and reduce in bright light, adhesions may be present. While these might not prevent light from reaching the retina, they would affect focusing and thus render the horse unsound.
4. Both eyes must be of equal size and contour. Eyes that have been previously injured may have lost fluid, and thus intraocular pressure may have been affected. An animal with such an eye would be unsound.
5. Inflammation of the conjunctiva may be due to short-term infection. It could, however, be chronic and incurable. No horse should be bought with evident conjunctivitis unless there is a warranty regarding soundness of the eye. In other words, you are given a guarantee that the animal may be returned if the condition does not disappear in a given time period.
6. Tear-staining of the face below the eye may indicate blockage of the nasolachrymal duct, which takes the tears from the eye and delivers them to the lower nasal region. While such a condition might be temporary, it will influence the examination and will have to be mentioned on the certificate. Its significance will depend on how long it is likely to have existed and the prospect of when it might clear up.
7. Abnormalities of the deeper structures of the eye are only detectable using an ophthalmoscope. The condition of the retina, the blood vessels and nerve supply to the eye are all critical to sight. Any deviation from normal will influence soundness and must be reported on the certificate.
8. The *corpora nigra* are black-coloured structures on the outer side of the lens. They are variable in size but are normal and would have to be very extensive to influence vision.

The Visual Examination

As the horse comes out of the stable, observation of its movements is critical, because horses with sight problems may bump into objects or lift their legs higher than usual if negotiating steps or other obstructions. The horse should be stood

squarely on flat ground (Figure 3.1). It is important that all four feet bear level, so there is an even view on all sides, to compare balance, the natural level of the limbs, and the uniformity of the shoulders, quarters, etc. (Figure 3.2).

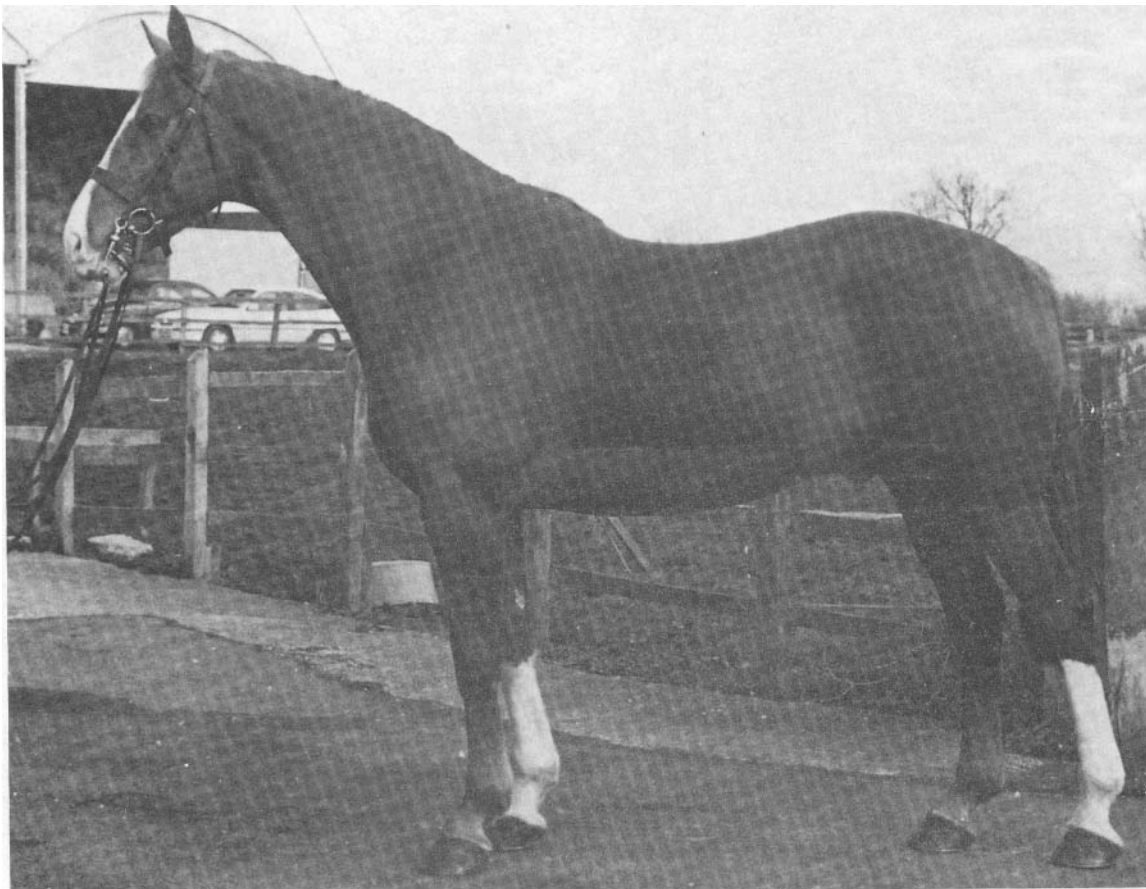


Figure 3.1 *The horse is positioned standing square on flat ground*

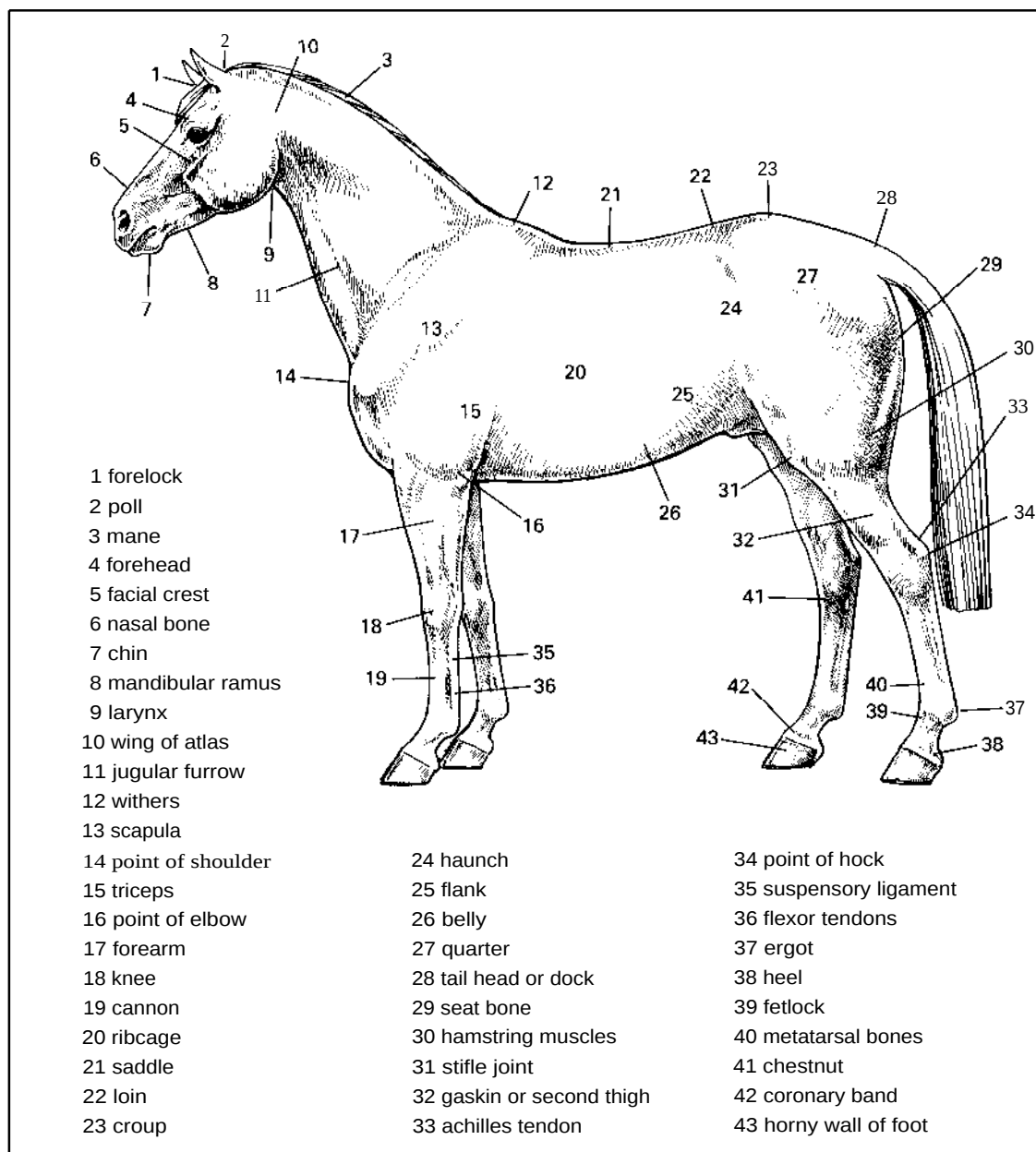


Figure 3.2 *Points of the horse*

Some vets conduct the main part of the manual examination within the stable, but I prefer to do it outside, after the visual stage when the horse is inspected by eye from a distance. The influence of the stable can diminish the view and limit the

perspective. I like to view the horse in detail first, then conduct the hands-on inspection afterwards. It is simply a matter of choice and procedure, because many vets do it in different order.

The important factor is to adopt a pro-

cedure to which one always adheres, ensuring the examination is both methodical and comprehensive. It is quite easy to be disorganised about the approach and hop from examination of one system to that of another, taking the chance of missing out on something vital. However, as stated already, it is best to view the animal as a whole so that it always remains a whole and not just a group of disjointed systems.

Conformation and Soundness

It should be appreciated here that conformational abnormalities do not necessarily constitute unsoundness. This is naturally a matter for the buyer, and a decision has to be made which rests away from the veterinary examination, though it may well be a topic for discussion with the vet. If a horse is ewe-necked the vet is not entitled to reject it on this ground, although a buyer may take an aversion to it when informed of its existence. Similarly, should a horse be back at the knee, this is not in itself an unsoundness and not a matter for the vet to be concerned with unless he considers the problem to be so exaggerated that the animal will not stay sound under normal riding conditions.

What this means is that a buyer is expected to be able to differentiate between good and bad conformation. If a horse is bought at a public sale, poor conformation would not be deemed adequate excuse for rejection afterwards, nor should it be. Many such animals live perfectly useful lives, although there is always the risk that problems will develop, and the horse will not be viewed favourably by a show judge. For a prospective racehorse, poor conformation would not be favoured, but would not make an animal unsound unless exaggerated.

For this reason it is important, especially when buying horses in a sale yard, to have a good look at them before bidding in the ring. Many disputes arise because a buyer did not adequately inspect an animal outside before sale. When in doubt, the best advice is to get the opinion of an expert.

It can happen, in these circumstances, that a buyer, who has failed to spot an evident fault, may try to use the veterinary examination as a means of getting out of the purchase of a basically sound animal. It is unlikely to work – unless something else turns up to facilitate the purpose. The animal, in most cases, is yours unless a fault or blemish is deemed to render it unfit for sale for the use for which it is being bought.

Examination of the Head

Standing at the front, the head is viewed first, looking for any evident abnormalities of outline or contour (Figure 3.3). The position and appearance of the ears is important, and usually, at this time, the horse, knowing the procedure is a change from routine, will have its ears pricked and show interest in the vet, or whatever else might be happening about it. Alertness is critical in gauging the mind of the animal and its relationship with events.

It is self-evident that soundness examination is an intrusion on daily routine, and may influence the way a horse reacts. Some animals immediately recognise and have an aversion to strangers, but most take the procedure in their stride.

The eyes are again noted, and the anatomical structures close to them are checked for signs of old injuries or fractures to the bony anatomy of the skull. The supraorbital process over the eye is sometimes injured in accidents and the ensuing lack of uniformity should be seen easily from this position. Also the pos-

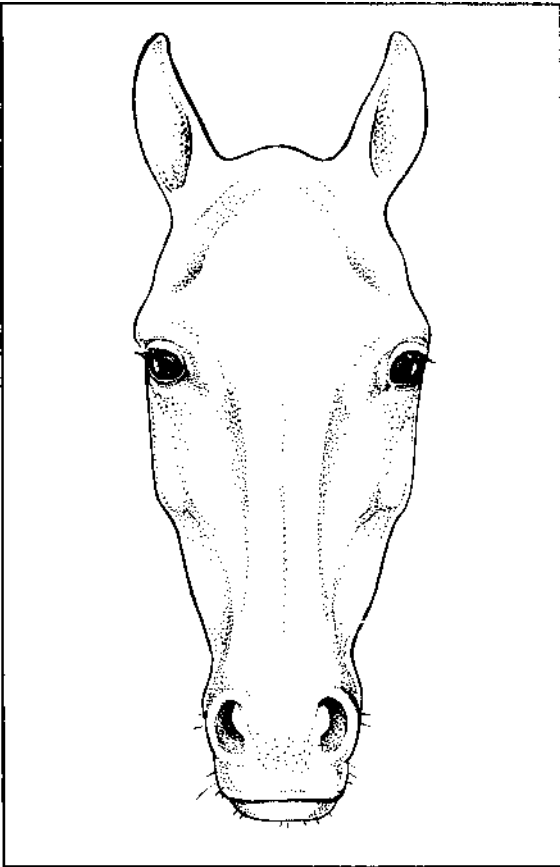


Figure 3.3 Frontal view of the head. The veterinary examination will ensure: both ears are uniform in size, position and movement; both eyes are equal in size and contour; both nostrils are equal in shape and movement; lips are closed with no deformity; no swelling over sinuses or teeth

session of a single – or bilateral – wall eye will be clear and this is a distinctive marking which may be vital to the identification of the horse, especially where there is a shortage of other markings. Either way, it is a marking which any registering body would wish to have recorded today and a vital part of identification for certification purposes.

The outline of the face should be symmetrical and without evident abnormal indentations. These could occur as a result of tooth problems – a dent may be detec-

table externally when an upper molar is missing. The outline could also have been altered by fracture; or, not uncommonly, if the sinuses are enlarged due to disease.

While it would be unusual to be presented with an animal with serious sinus infection, there are several grades of this condition, and, in many cases, the owner might not be aware it existed. However, a tap with a knuckle over a diseased area will evince pain and also produce a sound which is particular and distinctly dull (as opposed to the sound produced by a tap over a healthy sinus which is resonant).

It may be that a sinus infection is closed, in which case there will be no discharge. On the other hand, it is a simple matter for a knowing owner to clean off a discharge before the animal is examined. However, suspicions may arise from signs of pain in the area – as reflected in the face or eye – or other symptoms associated with the problem.

The nostrils should be equal, symmetrical and uniform in size and shape. They should both move in an even manner when the animal is inhaling and dilate equally as it exhales. The colour of the nasal and conjunctival mucous membranes is also looked at from here, paying particular attention to colour that is too deep or too pale and if there are any mucus, serous or purulent discharges.

A purple discoloration of the third eyelid that is sometimes seen with herpes virus infection is more easily recognised from a distance than close up.

A more detailed look at these membranes will be taken when the hands-on part of the examination begins.

Front View of the Neck and Shoulder

When looking at the neck and shoulder from the front (Figure 3.4), bilateral sym-

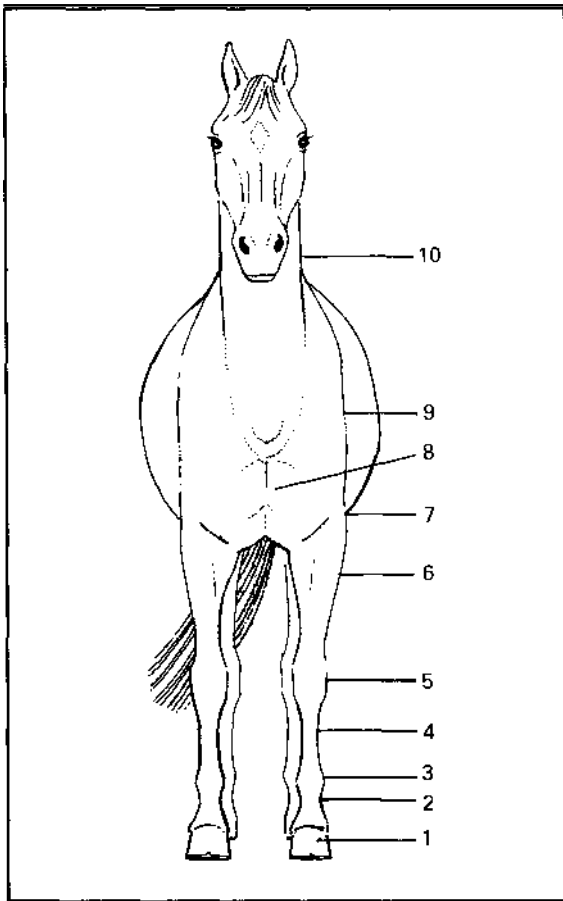


Figure 3.4 Frontal view of the horse. From the ground up:

- 1 hoof; note feet are of equal size
- 2 pasterns matching and free of swelling
- 3 fetlocks; equal in size and shape
- 4 cannon bones free of blemish
- 5 knees; in balanced position with no evident swellings or differences
- 6 forearms; equal in size and development
- 7 point of elbow level on each side
- 8 central point of sternum can be felt under skin
- 9 points of shoulder; even, uniform shape and no evident swelling or atrophy
- 10 neck; uniform and straight

metry in the bony and muscular structures is important, and the profile of each side should match perfectly with the other

with no wasting of muscles nor evident differences in outline. Also the head and neck should be straight, the carriage neither tilted or twisted to one side or the other. The forelimbs should bear evenly, and there should be no pointing of the feet, knuckling at the knee or fetlock, nor evident difference in the shape or angulation of the limbs.

While viewing from the front, the hocks may be looked at through the forelegs and note made of any bony development on the inner side that might indicate the presence of spavin.

Side View of the Head

From the side, the outline of the mouth may indicate misalignment of the incisor teeth. However, impressions can be misleading and the mouth will later have to be examined more closely with the teeth exposed, but an early suspicion that an animal has an undershot jaw might well be aroused here (Figure 3.5). The muscular tone of the lips should be normal and the animal's ability to use them precludes the possibility of paralysis in associated nerves. A lower lip that is hanging loose might indicate paralysis, but there are horses that enjoy playing with their lips – I know one that blows (or sucks) raspberries for fun, much to the annoyance of his owner.

The shape and development of the cheeks can be affected by wasting in the musculature and any lack of uniformity may have resulted from an accident. These are significant if they interfere with chewing or ability to masticate food properly.

Underneath the mandible (Figure 3.6), swelling of the submaxillary lymph glands indicates current or recent infection. Also note is made of bony swellings that could result from tooth problems, tight head-

Figure 3.5 *Jaw alignment variations: (left) normal mouth; (centre) overshot jaw, or parrot mouth; (right) undershot jaw*

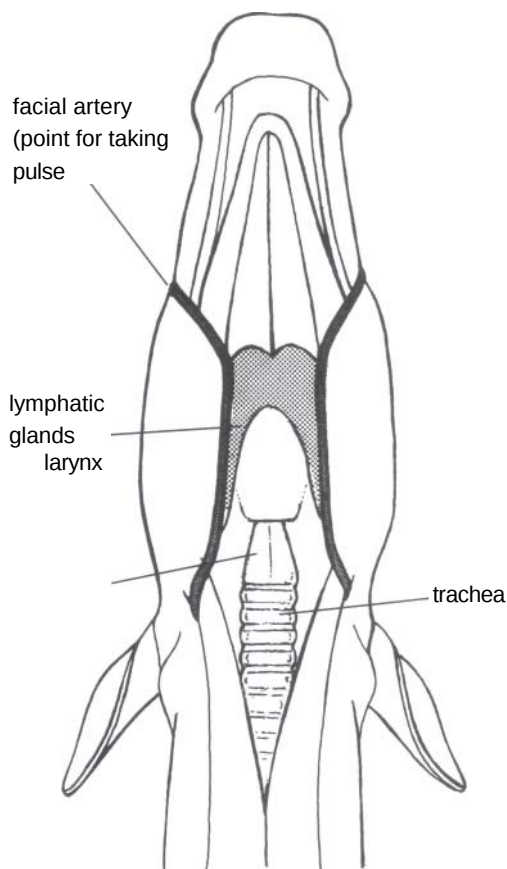
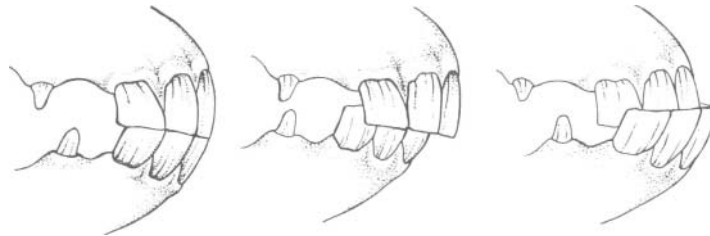


Figure 3.6 *Under view of the head*

collars, or from being struck against a door or manger.

After strangles, there may well be an open discharge (Figure 3.7), but an animal with strangles is unlikely to be presented for examination, it being a highly infectious condition. There are, however, many grades of gland swelling and it



Figure 3.7 *Thick nasal discharge from one nostril*

would not be impossible to encounter a horse in the early stages of strangles. At this time, before infection is evident, the glands will show no sign of enlargement or discharge, but the horse will probably have a temperature – which might affect the appearance of the coat, and may cause the horse to appear lethargic, or depressed. There are also, very often, strange throaty noises heard (but mostly when swallowing) that result from acute inflammation of the pharynx at this stage.

Not all large discharging glands indicate the animal has, or has had, strangles, but no animal with such a problem should be accepted or presented for examination. Abscesses in any other region should be treated with the same attitude. Personally, I would reject any animal with an abscess, though other veterinarians take a different view.

Certainly the last thing any vet will wish to do is to handle infected matter and run the risk of spreading it to other horses later on. It is unfair to other horse owners for such animals ever to be accepted for sale in public places, though they do appear sometimes.

Under most conditions of sale these animals would be sent home. In a private sale, a decision would be based on the situation of the abscess and its risk to other animals. While some vets may proceed, if feeling the lesion is innocuous, others might reject the animal out of hand. When the abscess had been successfully treated the examination could be proceeded with.

Note is taken of the ears again (Figure 3.8), especially relating to muscle tone and movement. It is easy to judge if muscle and nerve function are normal and that the ear is able to move in the direction of sound. The triangular area beneath the ear is where the jugular vein commences (beneath which the common carotid artery runs forward from the heart). Beneath this area is the guttural pouch, the thyroid gland – on either side of the upper end of the trachea – and the parotid salivary gland. A note is made of any abnormal swellings, or changes of the natural contour of the area. It is not uncommon for the thyroid gland to be enlarged and, while the matter must be mentioned, this finding is not necessarily of clinical signifi-

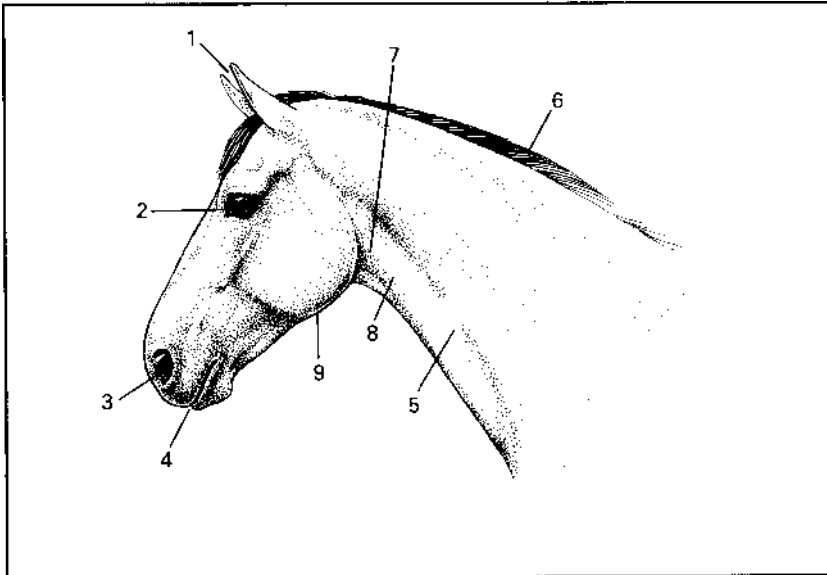


Figure 3.8 *Lateral view of the head and neck:*

- 1 ears erect and alert
- 2 eye full and free of scars, discharge, blemishes
- 3 nostril relaxed and dilating at inspiration
- 4 mouth closed and under normal nervous control
- 5 position of jugular furrow
- 6 crest strong and well-formed
- 7 no evident swellings or atrophy behind jaw
- 8 position of thyroid gland
- 9 no swelling under jaw

cance. Unless the animal is in poor condition or suffering from temperamental problems, it should not in itself constitute a reason for rejection. Many good animals perform well despite thyroid enlargement and it is not an uncommon finding in broodmares that breed with regularity.

In grey horses, as already stated, swellings under the skin in this region may be caused by tumour (melanoma) development. The question for the examiner is their long-term significance, and whether they could limit the life expectancy of the animal.

Other causes of swelling in this area, besides abscessation of glands, could be infection or air in the guttural pouches - a condition that is very uncommon in horses presented for sale. The guttural pouch is an anatomical structure peculiar to the horse family. It is a diverticulum of the Eustachian tube (see Figure 4.6), an air channel between the pharynx and the tympanic cavity of the ear, the purpose of which is to equalise air pressure on either side of the tympanic membrane, the partition between the external and middle ears. The guttural pouch is sometimes ballooned with air for unknown reasons. It can also be the source of bleeding at the nostril in horses at rest - as opposed to exercise induced bleeding - because it is closely related to the major blood vessels of the head which can become invaded by fungal infections in the pouch.

Side View of the Neck

Moving to shoulder level on the near side, the shape and design of the neck are again noted. The muscle in a ridden horse should be strong and balanced, with no pulling of the line of the neck to either side. The underlying bone should have a good covering and not be too prominent while giving a uniform outline to the neck

itself. The *ligamentum nuchae* - the ligament that suspends the head and neck from the withers - should be strong and give adequate support to these structures. There should be no indication of pain as might happen if there were problems of bony alignment. In such a case, there might be inclination of the neck to one side, though it would not have to be very pronounced. Pain here could also be caused by conditions like poll evil or fistulous withers.

In the jugular vein area, the development of superficial small veins might indicate the vein itself had been damaged at some time.

The Forelimb

The shoulder area is viewed from the side, from the withers area forward and down. The top of the withers may show signs of swelling, although fistulous withers is a less common condition today than it was some years ago. It is marked by open purulent sinuses which discharge onto the back and on each side of the upper scapular area. Poll evil is also uncommon now - showing similar effects in the region of the poll.

Any swellings in the region of the shoulder joint, and a wasting of muscles around and behind the scapula and humerus are of interest. It is quite common for the triceps muscle to be injured (this consists of three separate muscle bodies which attach the point of the elbow to the back of the scapula and humerus). The triceps rests at the front of the rider's leg. When it is injured, the shape of the area becomes distorted and this is reflected in the way the animal moves the limb. An assessment on this may be difficult to make, but it is vital to compare the conformation of both sides of the horse to reach even a presumptive

conclusion. More importantly, unevenness of gait in front may well indicate the presence of such an injury.

To illustrate this, I recently saw a well-bred gelding in the parade ring at a local point-to-point. He was moving so badly in front that I could tell with certainty he was unsound. It looked as if he was suffering from severe muscular damage in the shoulder area and even when walking in the parade ring there was a noticeable pull to one side. To my surprise, though, he won. For the whole of the race, he jumped badly to one side, almost ditching his rider at every fence, but winning with ease. Shortly afterwards, he was sold for a considerable amount at public auction. In my view the animal was unsound and there was no record that he ever won again. While it is possible to postulate that the initial trainer may have been lucky, or dishonest, the horse could have been sold without warranty, as he stood, and

bought on the basis of his last performance.

Although the condition should have been disposed to treatment, the animal was unsound while still suffering from it, even if he could win races. In a case such as that, buyers are often tempted to complete a sale, without vetting, on the basis of a winning performance, never realising it could be the last.

At the front of the shoulder (Figure 3.9), injuries or scars may have resulted from the horse striking doors or posts or other obstacles. There may also be evident swelling of the synovial bursa under the biceps *brachii* muscle at the front of the joint; while this condition may be curable it is a cause of lameness and a horse is unlikely to be passed with it. Between the shoulder and elbow there should be normal muscular development without any gross swellings which may relate to bony or soft tissue structures. In the con-

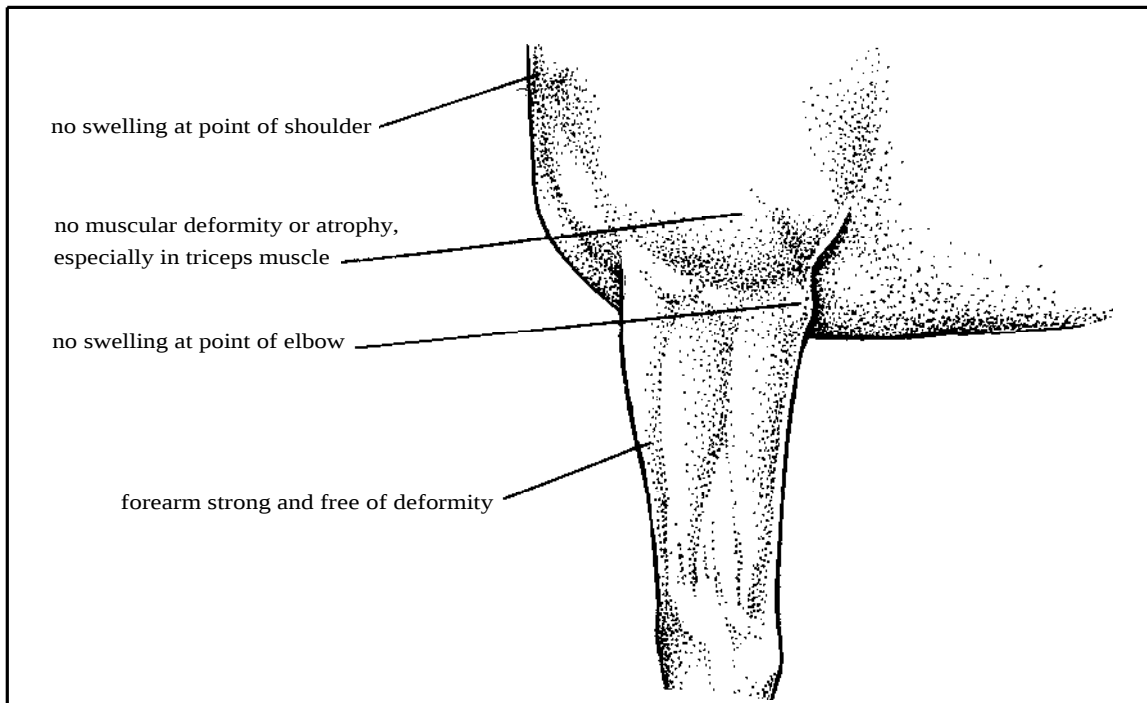


Figure 3.9 Lateral view of the shoulder and forearm

dition called Marie's disease, which a recent champion racehorse was said to have suffered from, bony swellings can occur in all parts of the body skeleton, and are particularly noticeable in the humerus and femur and other long bones of the limbs. However, such a horse could prove subsequently sound.

The Elbow and Forearm

The elbow itself may be capped, in which case there will be a pendulous swelling at the top of the ulna, perhaps even hanging down at the back of the bone – depending on the amount of fluid contained within it. While the condition is generally curable, a horse would not be passed with a capped elbow unless its development were very slight, but it would have to be mentioned on the certificate.

The forearm should be straight, with normal muscular development, and run down into the knee without any evident deformity and without any gross misalignment either backwards or forwards from that joint (Figure 3.10).

The Knee

The knee should be set in a straight line between the forearm and cannon and neither deviate backward or forward, inward or outward, from that ideal state. However, abnormal conformation, as already said, is not significant unless it amounts to unsoundness at the time or is thought to exclude the use of the animal for the purpose for which it is being bought (Figure 3.11).

The knee itself should be steady when the horse is at rest, with no vibration or

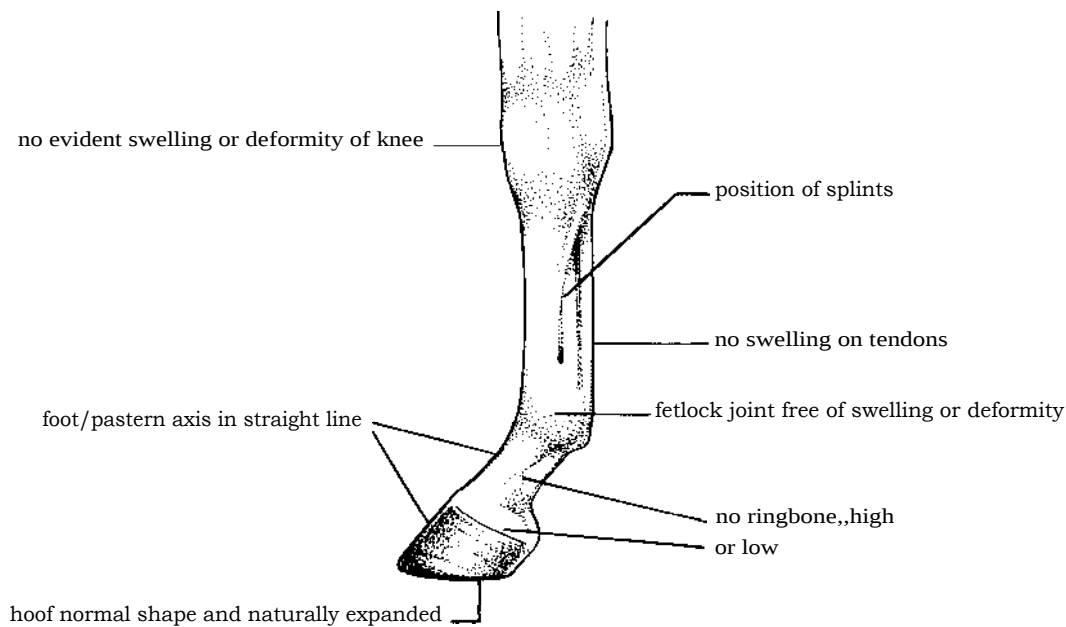


Figure 3.10 *Lateral view of lower limb*



Figure 3.11 *Bench knees in a twelve-year-old functionally sound animal. In some cases this conformation may cause rejection on examination*

knuckling evident as might happen if there were arthritis, or in the condition known as *osteodystrophia fibrosa* (caused by feeding excess bran to young horses). The joint should appear well bonded (which means that all the structures involved should be bound in a manner that implies strength and firm union), it should be a pair with its fellow, and be neither too open – due to immaturity or enlargement of the radial or carpal epiphyses – nor too tight, giving the impression that the joint is crowded, which might result from bony exostoses (growths) on the front of the bones forming the joint.

The Cannon

The cannon area is inspected with care, taking particular notice of the outline of the tendons, how these compare with

those of the other leg, and whether there is a matching angularity of both limbs through the knee/cannon/fetlock area. Where there has been previous tendon trouble it is generally easy to see, with experience. The outline of the tendon will not match its fellow – unless both have been injured. Also, the horse may look uncomfortable in a resting position, with evident distortion of the leg structures and a change in the pastern/cannon angle towards the upright, and a tendency for the knee to knuckle forward. Both these changes are due to relative shortening of the tendon occurring during healing, causing the lower limb to be pulled in an upward direction to accommodate it. However, the extent of this may be so slight that only a very experienced eye will detect it. In some cases only a small variation in the tendon outline is found.

This type of changed conformation is also not uncommon when there is existing muscular injury in the shoulder – without tendon damage – the consequent shortening of the limb structures pulling the fetlock into a more upright position and perhaps causing a forward deviation of the knee. The foot/pastern axis in this case is broken forward from the front of the coronet and the pastern will be more upright as well. The horse may appear to be standing with the heel raised. While it is possible to find such conformation naturally, it is unusual, and where it is marked in one leg there is usually a pathological reason behind it.

Any change in the front profile of the cannon bone is also taken into account; this occurs when the shins are bucked (become inflamed) – a reaction of the periosteum in young horses to excessive concussion on hard ground.

The Fetlock, Pastern and Foot

The shape and contour of the fetlock is

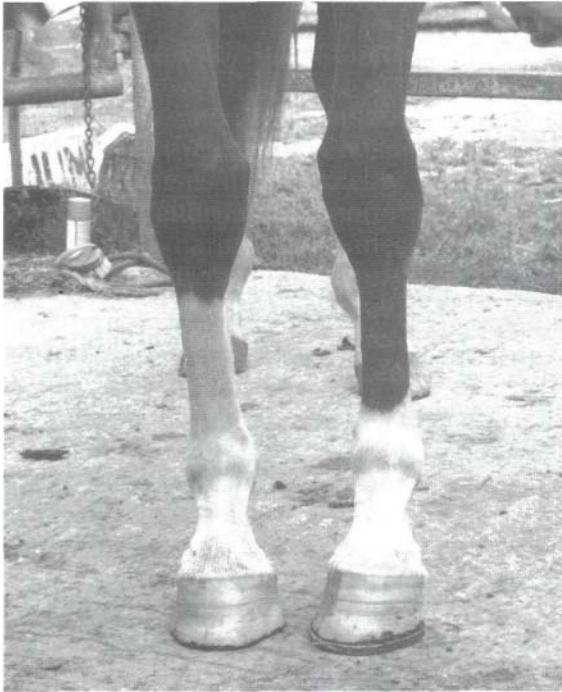


Figure 3.12 *Marked deformity of the left foreleg*

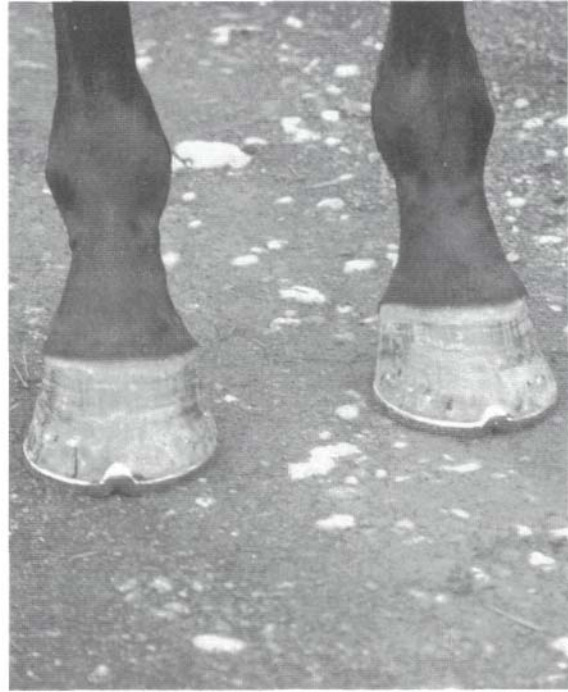


Figure 3.14 *Feet of equal size, well expanded*

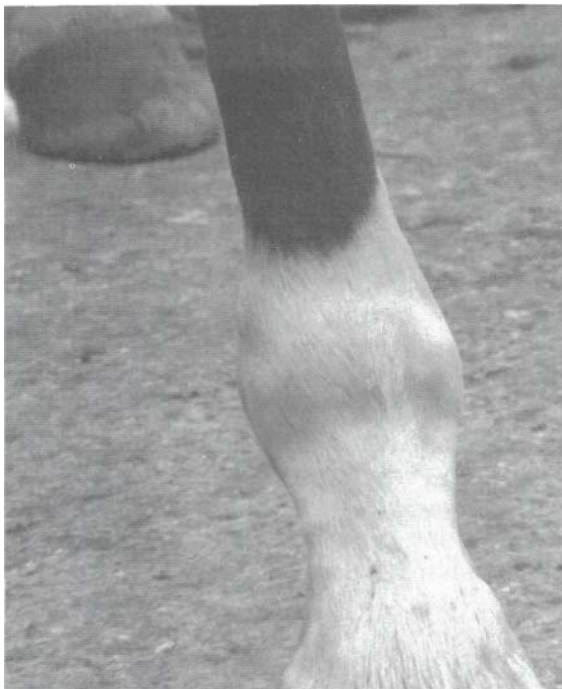


Figure 3.13 *Close-up of the same horse showing enlargement of the fetlock joint at upper medial side*



Figure 3.15 *Sole surface of the normal foot, with well-developed frog*

very important, because fetlocks which have been jarred on hard ground, especially in young horses, are very often enlarged and may have prominent synovial swellings (windgalls) behind them or bony swellings involving the epiphysis (Figures 3.12 and 3.13).

If the pastern is long or short, upright or too angled, it is not unsound unless showing evident ringbone formation (usually with lameness) either high or low, i.e. mid-pastern or at the coronet.

The foot needs special attention and should be full in shape and not contracted or boxy (Figures 3.14, 3.15 and 3.16). It should be viewed from all possible angles, comparing it with its fellow and noting the angle with the ground, the angle with the pastern, and if there is any imbalance in wear in one direction or another. Any evident cracks might be of importance, especially if the horse later proved to be lame. A horse would not be passed that had a full length crack from coronet to ground in which there was evident move-

ment. It could, however, cause the examination to be suspended and resumed at a later time, when the crack was effectively treated -- although this could take a considerable time to achieve. Alternatively, a buyer might decide to accept such an animal if given an extended warranty regarding the crack. In this case, the examination would only proceed as long as the horse did not trot lame.

The Back

The line of the back is now looked at, starting from the withers and running the eye along the surface of the vertebrae, watching especially for any change in the natural contour which might result from muscle spasm or alterations in the alignment of the bony structures. This might be as subtle as to only break the profile dorsally or ventrally for a matter of millimetres, but might be more obvious, and



Figure 3.16 Sole surface of the foot with a badly contracted frog

there could be abnormal curvature in any direction. To the experienced eye, any deviation will be marked down for detailed attention later, whereas if the extent of the change is exaggerated, the examination might be terminated here.

Special note is made of the line along the top of the sacrum, and the muscles on the side of the lumbar vertebrae and pelvis. The purpose is to detect any evident weakness, especially in the region of the jumping bump (*tuber morale*) and the outer angle of the pin bone, the ilium (*tuber coxae*). The tail is viewed for carriage and balance and for any indications that it has ever been broken or injured.

The Abdomen and Ribcage



The outline of the abdomen (Figure 3.17) should run back in a curved line that is not

Figure 3.17 *Lateral view of the flank and abdomen. The flank is uniform with no evidence of old wounds, fractured ribs or skin lesions; the abdomen is free of hernias and surgical scars*

too pendulous. The side of the ribcage should be flat and well rounded with no bumps indicating previous injury, including fractured ribs. Sometimes, older mares can have a tendency to very large abdomens, especially when in foal. This should not be confused with rupture of the abdominal muscles and herniation of the intestines when these are only supported by the skin. In the latter condition the signs are so exaggerated they are unmistakable. An umbilical hernia (Figure 3.18) would make an animal unsound, although it can be successfully operated on.

Growths, skin conditions and bald patches will all be noted as will any evident abnormality in the region of the sheath of a colt or gelding, or of the udder of a mare.

The Hind Limb



Figure 3.18 *Umbilical hernia*

Standing side-on, the hind limb and upper surface of the quarter are inspected in

detail (Figure 3.19). It is not uncommon for muscular and bony injuries here to cause distortion of the external anatomy, especially where there has been any disruption to the attachments of the sacrum to the pelvic bones. The common consequence is muscle wasting, though there is a high percentage of primary muscle injury to this part with no bony disruption. This, however, is better detected when the area is examined by hand.

The muscles at the back of the stifle should be strong and well developed (Figure 3.20), with no abnormal contours or unnatural dimpling of the skin which might occur with chronic muscle injury.

When these muscles are chronically injured, there may be an apparent shortening of the area with an upward pull on the hock, changing the natural shape of the limb.

The Stifle

The stifle should assume a natural position, have no abnormal swelling and be seen to move with ease even as the horse is standing. The area from stifle to hock should be angled normally with the joints above and below and show no evidence of



Figure 3.19 *Lateral view of quarter and hind limb. No swelling or atrophy in muscles of the quarter; no swelling or deformity at the haunch, hip or stifle; gaskin strong and uniform in development; tail balanced and natural in movement*

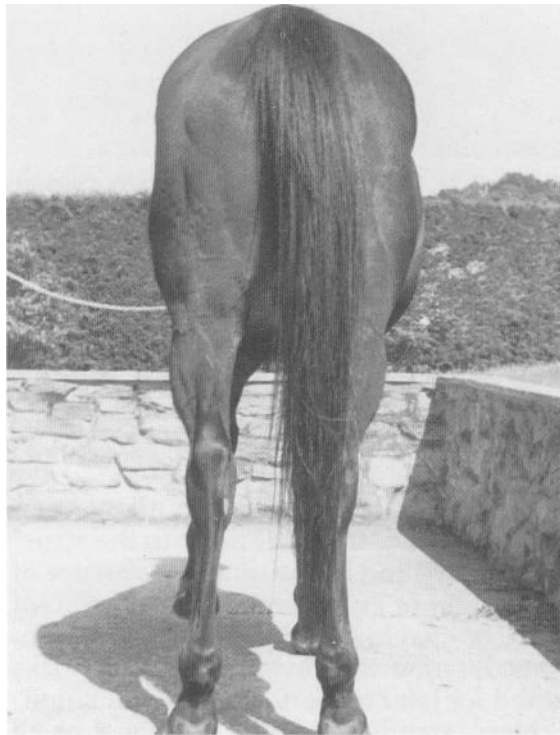


Figure 3.20 *Rear profile of the level at croup and haunch. No muscle wastage on upper profile; level at hip and stifle; gaskins strong, with no deformity; hocks unblemished and a matching pair; fetlocks level when bearing weight*



Figure 3.21 When the horse has been fully examined on one side the procedure will be repeated on the other

swelling on the bony or muscular structures.

The Hock

The hock will be judged on its angulation, the strength of its attachment to the structures above and below, and the absence of gross fluid or bony swellings. Any sign of curb, or spavin, will be quickly taken into consideration and evident capped hocks noted for later more detailed examination.

Next, standing behind, the level of all structures in both hind limbs is gauged,

taking particular note of muscle development. The position of the hocks is important as is the direction the legs face at rest. The hips, wings and upper surface of the pelvis must all be balanced and even, with no wasting and no evident bony differences.

The limb from hock to ground is similar in detail to the forelimb, except tendon injuries behind are far less common, and the angle of the foot and pastern with the ground is about five degrees more upright than in front.

This visual examination of the horse is now repeated on the other side (Figure 3.21).

4

The Head and Neck

The horse is now manually examined, over every part of its external anatomy beginning with the head and neck. We also consider some anatomical aspects.

Head and Neck Functions

The horse's head is elongated and bulky, much of this bulk being made up of the teeth and jaws and areas of bone associated with jaw muscle attachment. However, the principal purpose of the head is to house the brain and the organs of sight, smell and hearing, which are vital to the animal's capacity to relate to surrounding life.

Being a grazing animal, the horse must have a neck long enough to reach the ground without difficulty. This design also allows for change in the distribution of body weight and maintenance of balance both when standing and moving. By raising or lowering the head it is possible to alter the centre of gravity; while, by moving it to one side or the other, equilibrium can be maintained, even when rounding corners at speed.

Anatomy of the Skull

Of the numerous bones which comprise the skull those on the outside are mostly

flattened and are united along their edges during early life by cartilage which later becomes replaced by bone. When a young horse becomes adult, the union between these bones grows stronger and by the eighth year the skull is solid and unyielding (Figure 4.1).

The skull consists of two main portions: the cranium and the face. The former encloses the brain, the latter the oral and nasal cavities. The division between the cranium and face may be indicated approximately by a transverse plane through the front border of the orbits. In addition to this, the tongue contains its own supporting bone, the hyoid apparatus, made up of jointed sections.

The brain at the front is protected by the frontal sinuses, which provide a double roof of thin bone with a sizeable air space between them. The most direct approach to the brain lies behind these sinuses, in the triangle formed between the two *temporal fossae* – the depressions immediately behind each eye – and a point level with the base of each ear where the skin beneath the forelock ends on the upper limit of the forehead.

On the outer surface of the skull on either side is the orbit, in which is contained the eye, together with a quantity of semi-fluid fat in which the eyeball is cradled. The orbit consists of a complete and prominent rim of bone that surrounds the eye and forms an arch over the top – the supraorbital process (which can be

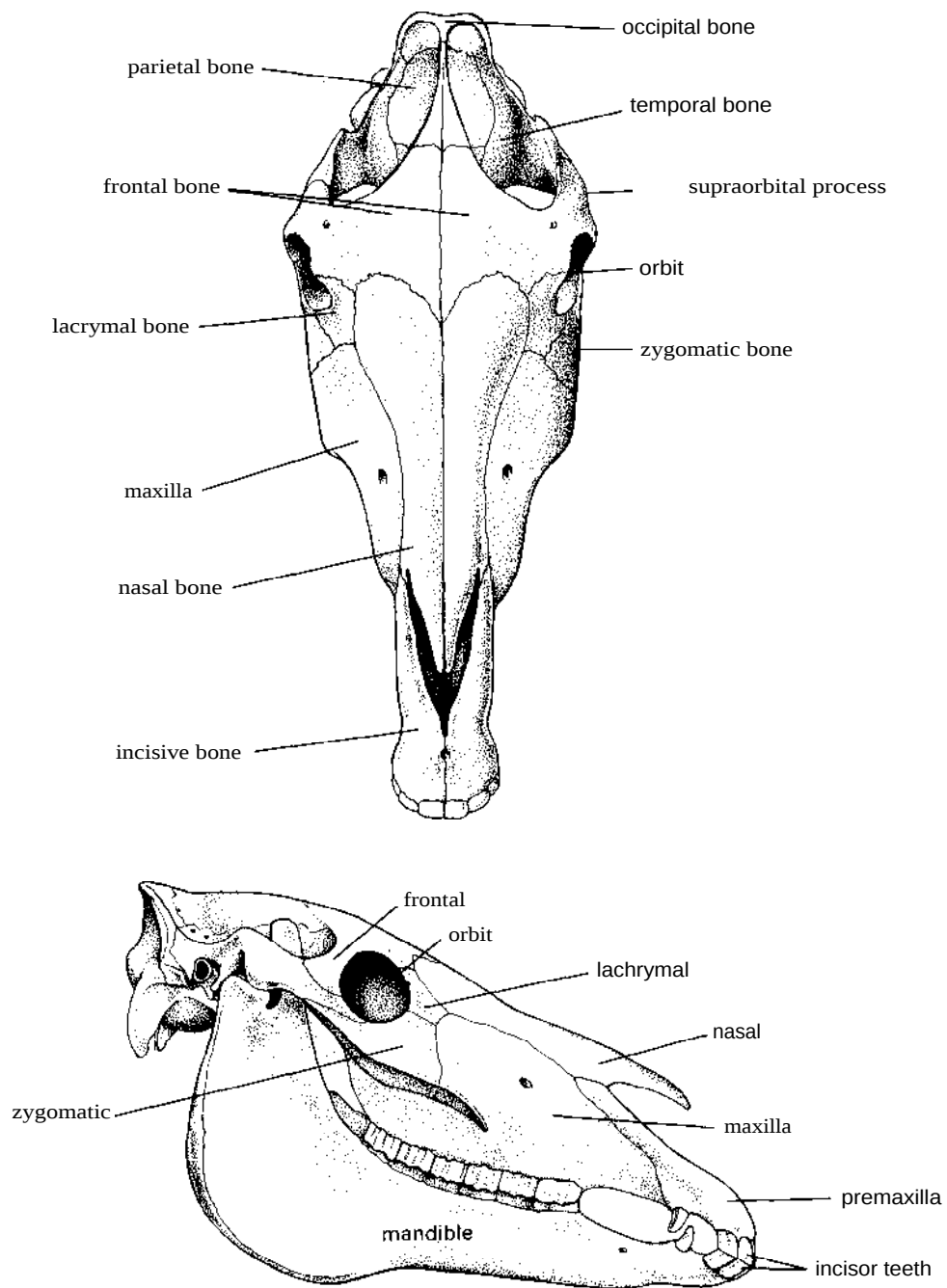


Figure 4.1 *The skull, showing frontal view (top) and side view (below) with sutures between separate bones*

located lying beneath the skin above the upper eyelid).

The facial part of the skull overlies the nasal and oral cavities. The nasal cavity provides a passageway for respiratory air-flow, and contains the sensory nerve endings involved in the sense of smell. The oral cavity lies between the upper and lower jaws. Projecting into the front part of the nasal cavity from both sides are the turbinate bones (*conchae*), providing an increased surface area for support of the highly vascular mucous membrane of the nose. Air circulating through the spaces between the turbinates (Figure 4.2) is warmed and moistened before entering the lower respiratory passages.

Surface Examination

The horse is approached from the front and the surface of the head examined in greater detail. The bony outline of the cra-

nium and face are felt and compared for signs of earlier fractures, lost molar teeth or evidence of muscular paralysis.

The mouth, nostrils, eyes and ears are then examined individually.

Anatomy of the Mouth

The mouth or oral cavity is subdivided into two parts by the teeth and jaws. The space outside the teeth is enclosed by the lips and cheeks, the true mouth cavity lying inside the teeth. When the teeth are in contact the two parts still communicate through the interdental space in front, and in the area behind the last molar teeth.

The cheeks form the sides of the mouth and are continuous in front with the lips. The internal lining of both lips and cheeks is reflected above and below onto the gums, and is reddish in colour frequently showing pigmented areas.

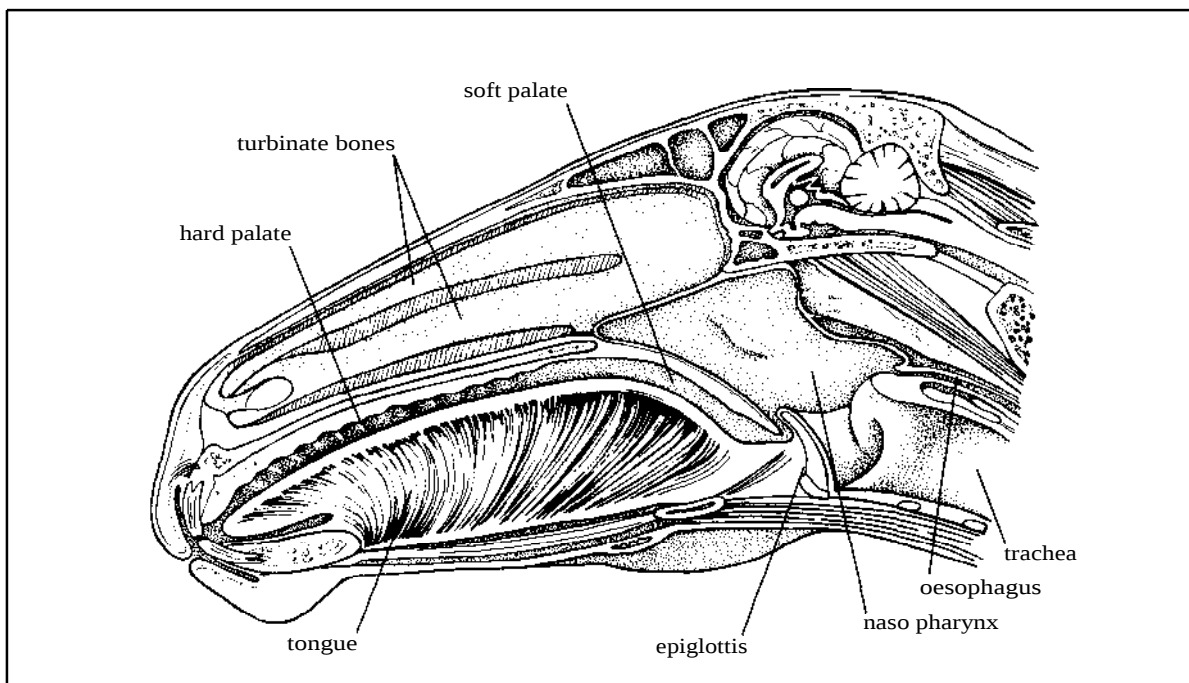


Figure 4.2 Lateral view of the head in cross-section

The tongue is flat and elongated and fills the space between the two halves of the lower jaw in the floor of the mouth. It is practically solid muscle throughout. These muscles are described as intrinsic and extrinsic, and move the tongue in a variety of directions. The intrinsic muscles are contained within the tongue; the extrinsic muscles originate from outside the body of the tongue, from the hyoid bone and the mandible.

On either side of the tongue are a pair of raised papillae which indicate the position of the openings of the salivary glands.

The roof of the mouth is formed by the hard palate in front and the soft palate continuous with it. The hard palate is covered by a dense mucous membrane which is crossed by about twenty curved ridges, their convex edges pointing forwards. At the front the hard palate fills the interdental space between the incisor and molar teeth. In stallions and geldings over three years old the canine teeth are positioned here, one on either side of the mouth in both the upper and lower jaws. In mares the canine is usually either absent or rudimentary.

Wolf teeth are rudimentary teeth which appear in front of the first molar tooth on each upper jaw.

The soft palate is an oblique, valve-like, curtain separating the mouth cavity from the pharynx. Owing to the length of this structure – the free border of the soft palate contacts the epiglottis of the larynx – the pharynx is closed from the mouth except during the passage of food or drink to the oesophagus.

The large size of the soft palate explains why the horse has difficulty mouth breathing; also why it has difficulty vomiting through the mouth.

If vomiting does occur (it is rare on account of the nature of the junction between the oesophagus and stomach) the ejected matter escapes usually through the nostrils.

The pharyngeal wall is occupied by the diffuse tonsil.

Surface Examination

The tongue may be inspected by parting the lips and inserting a hand into the interdental space between the incisor and cheek teeth. The front end is free and can be drawn out and examined. The hind end or root is thick and cannot be moved from its resting position. Tone, colour and freedom from evident ulceration or scars are noted.

I recall a yearling which had its tongue almost severed when tied up with baling twine, just before it was due to go to sales. Surprisingly the wound healed without complication.

Bad odours from the mouth could indicate tooth decay or localised infection and would require further investigation. Horses do not normally suffer from halitosis, thankfully, and any such smell would have to be explained.

Next, note is taken of the disposition of the teeth. At birth the foal has three cheek teeth; at two years, five; at four to five years it has a complete set of six cheek teeth.

Special attention is given to sharp edges, uneven wear, a step mouth in which some teeth project farther than others, missing teeth, caries, or teeth worn down nearly to the gums. Horses that crib-bite often show uneven wear at the front of both upper and lower incisors. Such a finding would be mentioned to the buyer, especially if no vice were being declared (Figure 4.3).

The presence or absence of wolf teeth is detected on both sides. Wolf teeth are not an unsoundness and are present in a great number of horses at some stage of their life. In some cases, traces of improperly removed wolf teeth are left behind, a broken tooth or maybe only an exposed

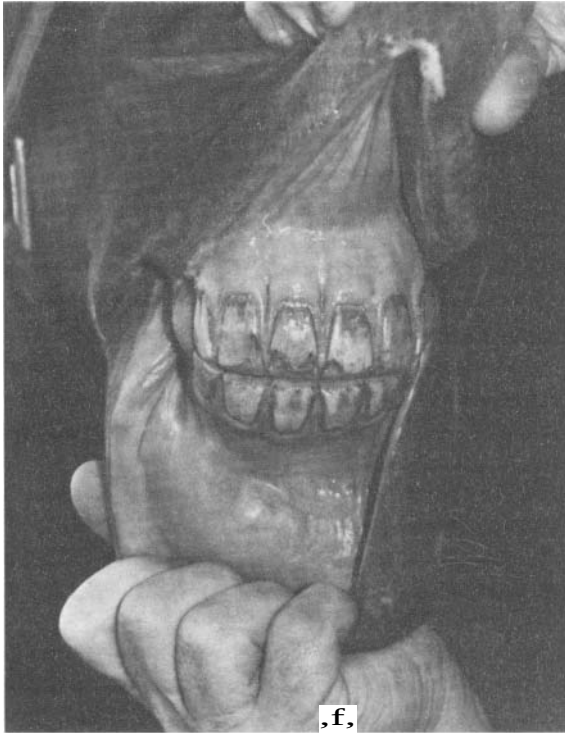


Figure 4.3 *Incisor teeth worn from crib-biting*

root being found on inspection. However, such roots could make a horse very sensitive to the bit and hence a very uncomfortable ride. They would therefore be of material interest to a buyer.

The inside of each cheek is checked for any scarring caused by sharp edges.

The condition, shape and angulation of the incisor teeth are critical, not only to the health of the animal but also to the determination of age. If any tooth were missing, this would have to be brought to the attention of the buyer. Often the problem in these cases is the effect a missing tooth has on its remaining opposite number which may grow excessively long. There can also be accumulations of food material which develop an offensive odour and can cause localised infection.

It must be appreciated that age is only gauged with relative certainty until a horse is five, perhaps six, years old, based

on the eruption of the permanent teeth and the shape they assume thereafter. There is even a certain amount of variation in eruption and it is not uncommon for a four-year-old to have a three-year-old mouth, for instance. This naturally depends on when each tooth erupts in a given animal. The significance of this is small when there is certifiable proof of age, but could be a cause of dispute where an unregistered horse does not have a mouth that agrees with the claims of its vendor.

When examining horses of seven years old and over, the degree of accuracy reduces progressively, and, once an animal is 12 or more, the angulation of the incisor teeth, shape of the worn surface, and the degree of development of Galvayne's groove are virtually the only indicators that are of value. This means the opinion expressed is only likely to be accurate within a year or two at best, and in horses over 20 the examiner would be doing well to be within five years of the true age, failing other more positive means of proof.

Mucous Membranes

The colour of the membranes of mouth, nose and eye is a vital indicator of health and is worthy of particular comment at this stage. Where an obvious gross abnormality is seen – like marked jaundice – it is unlikely the examination would be proceeded with further. Jaundice could indicate poisoning with a plant such as ragwort; it might indicate infection with an organism such as leptospira – the cause of Weil's disease in man – very often carried by rats (passed in urine) to infect dogs and horses.

A milder degree of jaundice is sometimes seen in herpes virus infections caused by the EHV-1 virus. This may vary

from a mild tinge of yellow, not always easily detected, to deeper shades, but never as deep as in ragwort, or chemical intoxications.

It is possible, especially during early grass growth in May and June, to see staining of the oral mucous membrane which seems similar to jaundice, but this is only an impression and examination of the eye and nasal mucous membranes will fail to reveal the same pigment.

Blue or purplish discoloration may indicate venous congestion as a result of problems in the heart and/or lungs. While such an animal is inevitably ill, some appear surprisingly bright and show no sign of stress until exercised. This discoloration will also be matched in the nose and eye and, when present, is a significant warning to watch for problems at a later stage of the examination. However, it is possible for discoloration of membranes to occur when an animal is just mildly toxic – perhaps from chronic digestive problems. Such an animal may suffer from reduced exercise tolerance and is commonly prone to heart irregularities. The condition responds well to purgation (a form of treatment which is out of favour but which is often the best way of relieving this and other conditions of the bowel) or, occasionally, a change of diet. Such an animal would not necessarily be unsound, though the vet might suspend his examination until the problem had gone. The owner, being warned, is in a position to have the condition treated, after which the examination may be resumed, or the animal reoffered for sale. Evidence of constipation or diarrhoea, if available, may support an opinion of digestive disturbance and, depending on the age and general condition of the horse, assist the vet in reaching a decision.

Exceptionally pale membranes indicate anaemia, which could result from insidious blood loss (due to worms), from haemorrhage, or result from chronic infec-

tion. While it is not a common finding in soundness examinations, horses can be anaemic without noticeable change in membrane colour. In these cases there is a marked increase in heart sounds, a reduced exercise tolerance, and murmurs are commonly heard.

A distinct purpling, especially in the nasal mucous membrane, is indicative of rhinopneumonitis caused by herpes viruses. It is a symptom which is so typical it is virtually diagnostic, and is often associated with enlargement of the submaxillary lymph nodes. These do not become as large as in strangles, but grow to the size of peas or much bigger; they are unlikely to break out and discharge, however. The same discoloration will be seen in the third eyelid in particular, and is often the first sign of infection noticed.

The presence of herpes infection, especially if an animal is young and healthy and showing signs of recovery, does not necessarily make it unsound, nor mean it cannot be examined with safety. However, any potential purchaser would be entitled to know about such a condition and would be perfectly within their rights to refuse to conclude the sale while the condition is present. On the other hand, if the animal were going to a home where there were no other animals the infection would pose no threat, though a decision on this would have to be made by consultation and agreement. Certainly no racehorse trainer would entertain taking such an animal into a racing yard. Perhaps, though, if the horse were one of great quality, it might be sent for isolation or quarantine and accepted after a suitable period of time. The decision will rest with the parties involved in the purchase, and the willingness of a trainer to have the horse in his yard.

Of course, the specific diagnosis of any virus infection is dependent on viral isolation or serology (laboratory examination of serum). However, for those who have

encountered these infections at first hand over a period of years the symptoms are readily recognised.

The occurrence in 1993 of Equine Viral Arteritis (EVA) (also known as Pinkeye) in Britain makes the recognition of abnormal membranes here all the more vital. Human observation is essential in this.

Anatomy of the Nostrils and Nasal Cavities

The nostril is a large somewhat oval opening bounded on either side by the wings (*alae*) (Figure 4.4), which are supported by cartilage that helps to prevent them from closing during inspiration. These wings meet above and below to form the commissures, the upper being narrow, the lower wide and rounded.

If a finger is introduced upwards, from below the upper commissure, it will enter the false nostril. This is about 10 cm (4 in)

deep and lined by a continuation of the skin and not by the mucous membrane which covers the inner surface of the nasal passages.

About 5 cm (2 in) from the lower commissure, there is a small circular hole, as if a piece of skin has been punched out. This is the lower opening of the nasolachrymal duct through which tears drain from the eye to the nose. Just beyond this the skin is replaced by pink mucous membrane and this lines the nasal cavities.

Muscular action on the cartilages permits the nostrils to dilate and contract. They also dilate by the forcible expiration of air during the act of snorting.

The nasal bones form the roof of the entire nasal passage (Figure 4.5). Together with the maxillary bones which form the walls, and the hard palate which forms the floor, they enclose the closely rolled turbinate bones, mentioned before; two superimposed on either side. One pair is separated from the other by the nasal septum which divides the nasal chambers into two compartments.

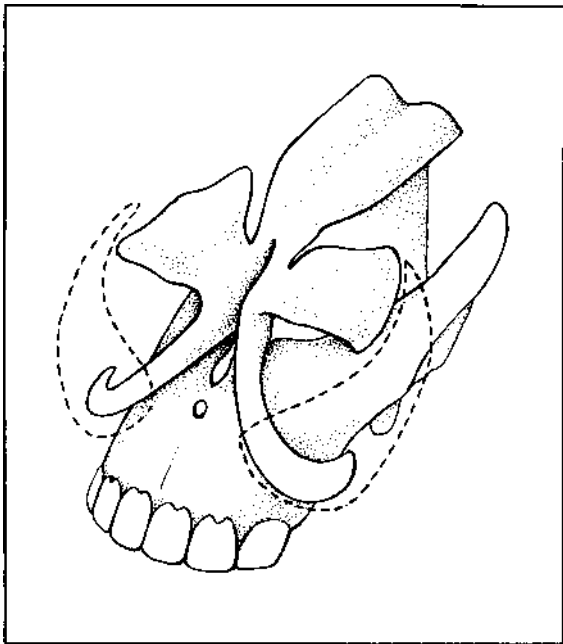


Figure 4.4 Nostril of the horse, showing nasal cartilages

Surface Examination

The wings of the nostril are now dilated by hand and should there be any unevenness of movement due to nerve damage or scarring, this will be taken into account. Wounds and scars are not uncommon in this part of the anatomy and their after effects are of particular importance if they interfere with air intake (or the ability to take in food, when the mouth is affected). Naturally, any interference with the normal anatomy of the nostril will be taken seriously if this is likely to allow entry of dirt into the chamber, or exposes membranes to irritation. Such an eventuality would have to be reported to the buyer and could preclude a sale.

Unpleasant smells from the nostril might arise from a sinus infection, but

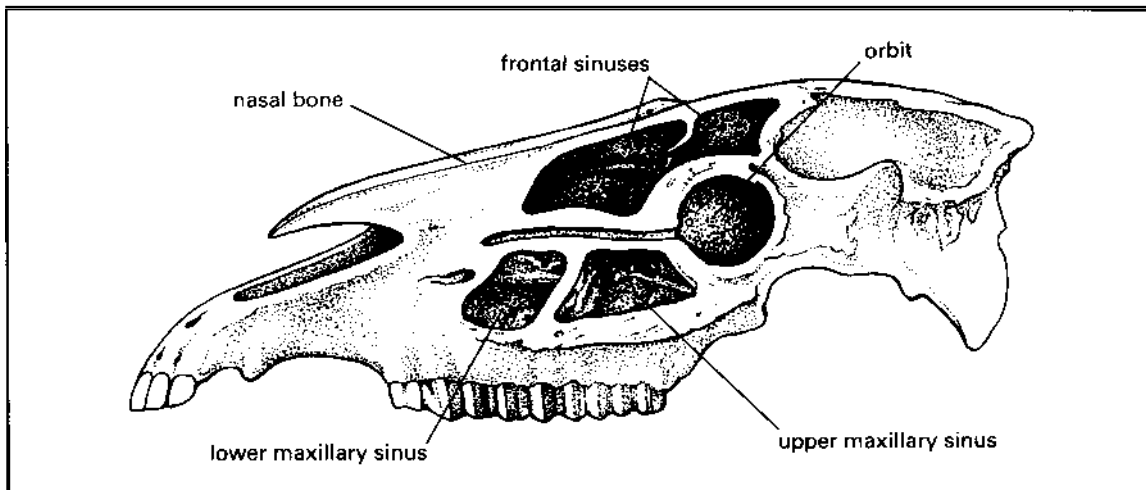


Figure 4.5 Section of the skull showing sinuses

could be caused by infection in any part of the upper tract.

The false nostril is a blind pocket on the upper medial side of the nostril whose function is to filter off dirt that comes into its path. Cystic growths are sometimes found there, but it is most noteworthy as the site of origin of high-blowing. This noise occurs during the expiratory phase of the breathing cycle but may cause confusion when horses are being tried for their wind.

The nostrils will, even in a horse at rest, contract gently on inspiration and dilate on expiration. They dilate when an animal snorts or clears its nose, and can be seen widening when there is an increased need for oxygen at extended gaits. Air is taken in as the horse inhales at a time when all four feet are off the ground at canter and gallop. If the nostrils are blocked off momentarily by hand, there is a resulting increased respiratory effort when released with greater dilation when they are uncovered.

Nasal discharges will again be noted at this stage, when traces of discharge earlier cleared off may begin to accumulate again.

The openings of the nasolachrymal

ducts are checked to ensure they are unobstructed.

Further Examination of the Eye

The eye is viewed again at this point to detect any abnormality not already seen and to further gauge its natural use and the horse's perception of those around it.

Anatomy of the Ear

Each ear comprises three compartments of which only the external is visible. The middle and internal ears are contained within the skull at either side (Figure 4.6). The middle ear contains the tympanum or ear drum, a thin elastic membrane situated between the external and middle ears. Sound vibrations cause this diaphragm to vibrate, the vibrations being transmitted to three small bones – the malleus, incus and stapes – within the cavity of the middle ear, which are linked together. These in turn transmit the vi-

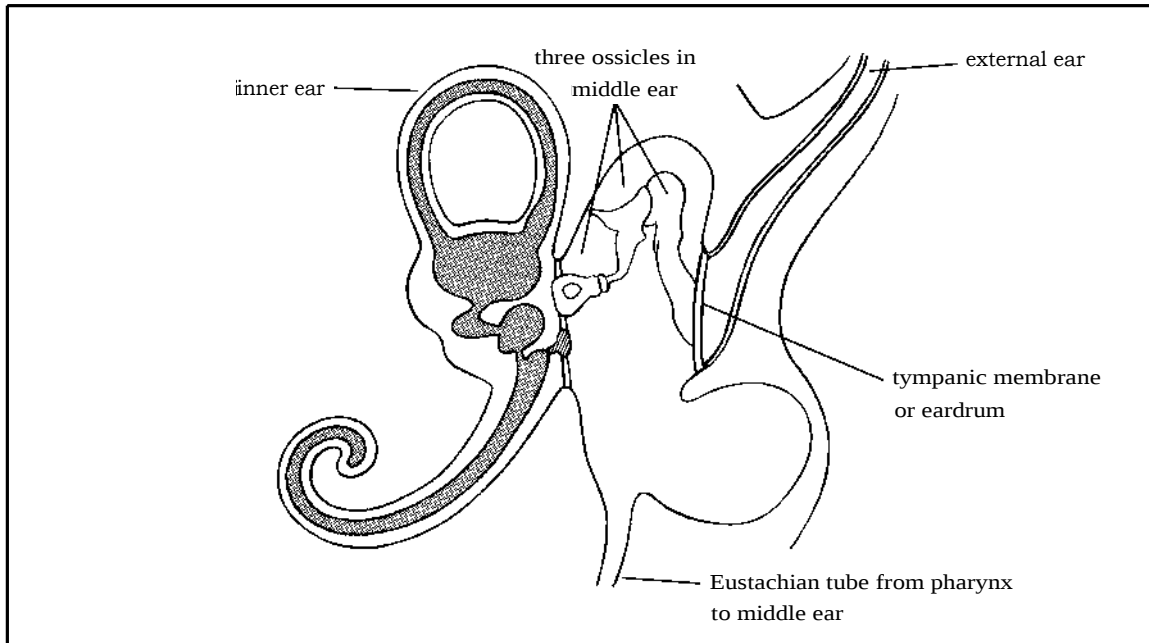


Figure 4.6 *Hearing apparatus of the horse*

brations to the fluid within the ear. Nerve impulses, thus generated, are transmitted to the brain.

Surface Examination

The external surface of the ear is examined for scars or signs of injury or paralysis. The inner surface is checked for plaques, sarcoids, mites or any signs of irritation. Hearing is best gauged by watching the animal's reaction to external noises.

The Paranasal Sinuses

During evolution, in order to survive, the horse had to have strong, continuously growing cheek teeth, and large powerful jaws, in contrast to the small cranium and light superstructures above. So the upper part of the skull was obliged to develop in

a way that provided accommodation for this. Had this been achieved by new bone deposition, it would have increased the weight of the head too much. Therefore evolution enlarged the bones by including air cavities within them; the surface area was increased without any great increase in volume, or weight, of the whole.

There are a number of sinuses in each half of the horse's head, namely the frontal, superior and inferior maxillary, and sphenopalatine sinuses. Infections of the sinuses may easily be drained by trephining (surgical drilling) and evidence of any scars as a result of such surgery will be noted.

The sinuses fill with air, or, at least, change some part of their air content during expiration. They are lined by a continuation of the mucous membrane of the nasal passages and are readily involved in the course of nasal infections. In the horse at least they have no recognised function other than to provide the head with size

and contour. They are not concerned with the sense of smell.

yngeal muscles, and also serves to suspend the larynx in the ventral part of the throat.

The Hyoid Bone

The hyoid bone (Figure 4.7) is situated at the base of the tongue. The whole apparatus resembles a child's swing with the body of the hyoid being the seat. The body is also joined up with the larynx and the root of the tongue. The hyoid apparatus therefore serves as an important area of attachment of tongue, pharyngeal and lar-

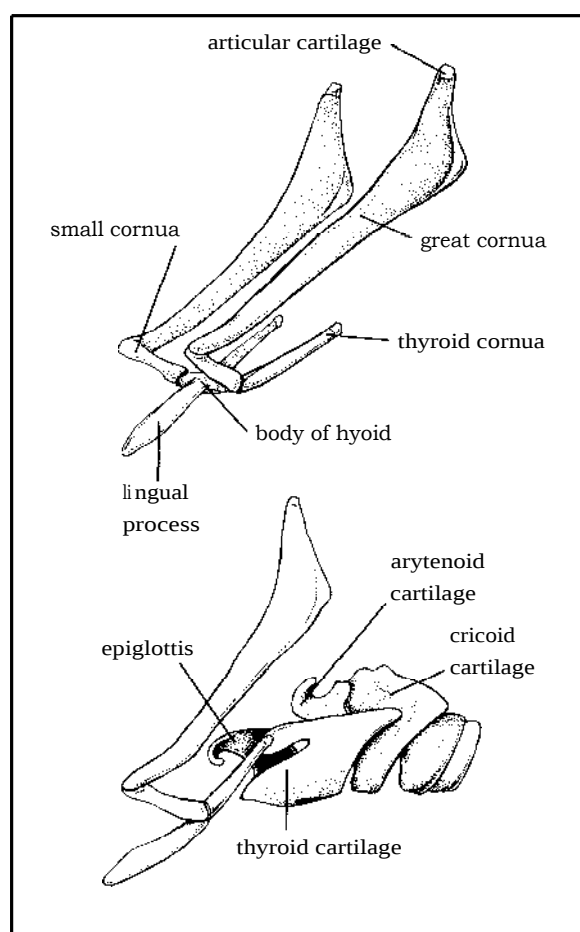


Figure 4.7 The hyoid apparatus and its relation to the larynx

The Intermandibular Space

This space lies between the two lower jaws. It is a common site for taking the pulse – about 12 cm (4.2 in) forward from the angle of the jaw on either side (see Figure 3.8).

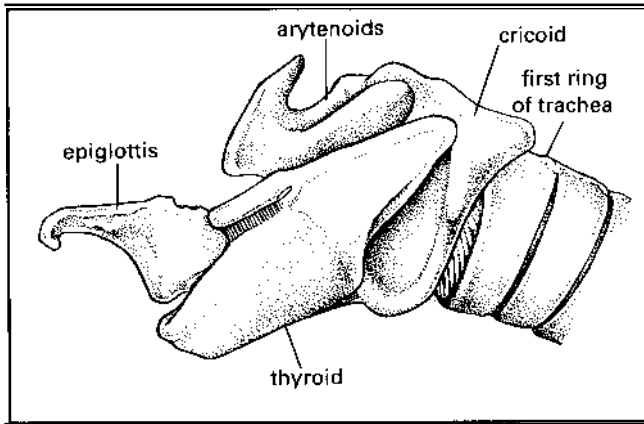
The normal pulse rate is 35 per minute in the resting horse with a variation between 30 and 50. The pulse increases rapidly with exercise, but the resting rate tends to reduce as a horse progresses in training.

In the centre of the intermandibular space, immediately below the skin, lie the mandibular lymph glands arranged in two elongated groups. These are the glands that become inflamed and swollen in influenza and other throat infections, and are often the seat of abscesses in strangles. Sometimes these swellings are so small that they are undetected by eye, however, their presence may help in diagnosing infection.

In the middle of the hindmost part of the space the larynx is palpable; it joins the trachea before the latter passes down the neck. Gently squeezing the trachea, especially near the larynx, will often make a horse cough.

The Larynx

The larynx is a short tubular structure situated between the pharynx and trachea – the passage leading from the nasal chambers to the lungs. Often called the voice-box, the larynx contains the vocal cords. It is made up of five cartilages (Figure 4.8) articulated together. These

Figure 4.8 *Anatomy of laryngeal cartilages*

serve as attachment areas for muscles which open and close the glottis (the opening into the larynx) by tightening or slackening the **mucous membrane** attached to it. The epiglottis rests in the median plane and is the most anterior of the cartilages, projecting in front of the glottis.

When a horse swallows and food passes back from the mouth it must cross over the larynx to gain entrance to the oesophagus, the food passage to the stomach. The epiglottis protects the larynx by bending backwards when pressed by the tongue, so preventing food from going the wrong way. The glottis is thus sealed when food passes over it.

Paralysis of the muscles activating one of the two arytenoid cartilages, most commonly that of the left side, causes partial obstruction of the airway when air is passing inwardly. This occurs in the condition known as roaring.

Surface Examination

First the mandibular area is examined for evidence of swelling – that might result from tooth abscesses or skin infections – and for enlargement of the related lymph nodes.

The area over the larynx is carefully

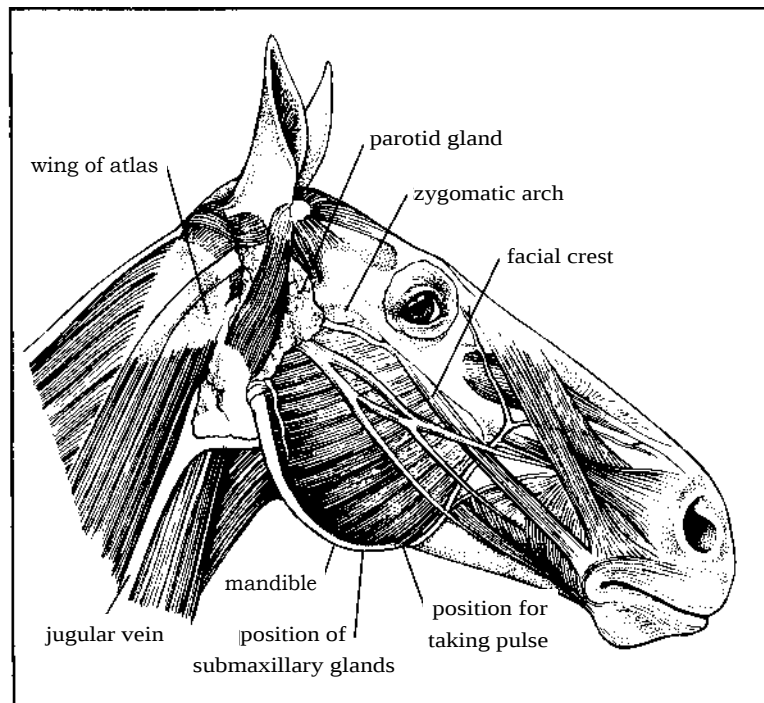
inspected for signs of muscle atrophy and cartilage abnormality (particularly on the left side) which might indicate a horse is a roarer. Also, evidence of any scar that might show the animal has been subjected to a Hobday or other operation in the past. While some such scars are small and difficult to detect, there is generally an adherence of skin to underlying structures which is not found in horses which have never been operated on. The fact that a horse has been Hobdayed or had any other wind operation would have to be declared before sale and discovery of such a wound would automatically entitle a buyer to reject the animal where it had not.

By the same token, the musculature in the neck is carefully examined to eliminate the possibility that operations have been carried out for defects such as wind-sucking. The integrity of the trachea is checked for signs that the horse might have had a tracheotomy tube inserted or suffered any injury to the tracheal rings during its life.

The Poll and Neck

Immediately behind the mandible, and following its vertical margin, is the trian-

Figure 4.9 *Subcutaneous view of the horse's head from lateral aspect*



gular area which commences at the ear and has its base between the angle of the jaw and the top of the jugular furrow. Its lower (or posterior) angle is continuous with the jugular furrow which passes down the length of the neck (Figure 4.9).

The parotid gland is the largest of the salivary glands and can easily be felt as it lies almost directly beneath the skin here. It commences at the root of the ear and stretches downwards filling up the space between the wing of the atlas and the edge of the lower jaw.

The wing of the atlas lies at the extreme upper part of the neck behind the base of the ear. Its prominent rim is subcutaneous and lies just below the level of the mane. In front it bounds the parotid gland while behind it the jugular furrow runs obliquely down the neck.

The upper and lower boundaries of the jugular furrow are formed by muscle. The jugular vein is subcutaneous and parallel

with it, but, deeper in, runs the common carotid artery – a fact worth noting for those people who administer intravenous injections. Down the lower margin of the neck the trachea or windpipe is easily felt. On the left side the oesophagus lies along the upper surface of the trachea in the same plane as the jugular vein. Although the oesophagus is not readily discernible it becomes so when the horse eats or drinks and the material swallowed dilates the organ as it descends.

Head Movements

The joint between the occipital bone of the skull and the atlas permits nodding (up and down) movements of the head upon the neck. That between the atlas and axis permits, within limits, rotation of the head and the neck. The joints between the last

five cervical vertebrae allow lateral curvature of the neck, together with some degree of arching in which convexity of the spinal bones is directed upwards. Movements to produce the opposite condition in which the convexity is increased in a downward direction is only very limited.

The head and neck may be turned to either side to check flexibility, and should be able to bend as far as the shoulder with relative ease.

Surface Examination

The area of the poll is handled now, though horses which have been abused at some time may be resentful of this even though there is no current problem. Recently it took me 20 minutes to examine the eyes of a quiet riding horse. The reason for this, I was informed, was because the horse had had a bottle broken over its head in its younger days. No one could tell me if the perpetrator had had a bottle broken over his head in return! I trust he had.

The area immediately beneath the ears is examined closely for the type of swelling mentioned earlier in relation to the thyroid glands, guttural pouches and related structures. Tumour formation in grey horses is particularly significant.

The jugular vein on either side is examined carefully. The blood flow is checked by placing a finger strategically to occlude it, watching that it fills with blood, then releasing the finger and allowing it to return to normal. Some authorities accept

damage to the jugular vein as common and of little significance. It can be a nuisance where intravenous injections have to be given and there is no jugular available; this would always have to be mentioned in a certificate. I knew a good eventer that was sold without a jugular vein on one side. When this was discovered later, the animal was returned to its original owner. This kind of occurrence used to be more common when drugs like chloral hydrate were used extensively for intravenous anaesthesia. It is not so common now, although, in the USA, occlusion of the jugular is commonly referred to as 'bute neck', and is considered to be of little significance clinically.

The neck may be checked for movement and flexibility here, though a better impression of carriage will be gained as the horse is manoeuvred later. The surface of the neck is handled for evidence of localised pain, either in bone or muscle.

In the lighter breeds in particular, the transverse processes of the cervical vertebrae are felt on the lateral surface of the neck. These are most apparent half-way down, and lie relatively low in the neck at this point. Farther up they assume a higher level but their firm substance can still be felt manually.

It is quite common for subcutaneous and intramuscular injections to be given in the neck. Traces of tissue damage due to faulty injections are often found in this area and have to be noted. Sometimes these can result in sinuses which open from time to time, and may also affect neck movement.

5

The Ribs, Sternum and Forelimb

Anatomy of the Ribcage

The manual examination of the horse's external anatomy now turns to the ribs, sternum and forelimbs and their attachments.

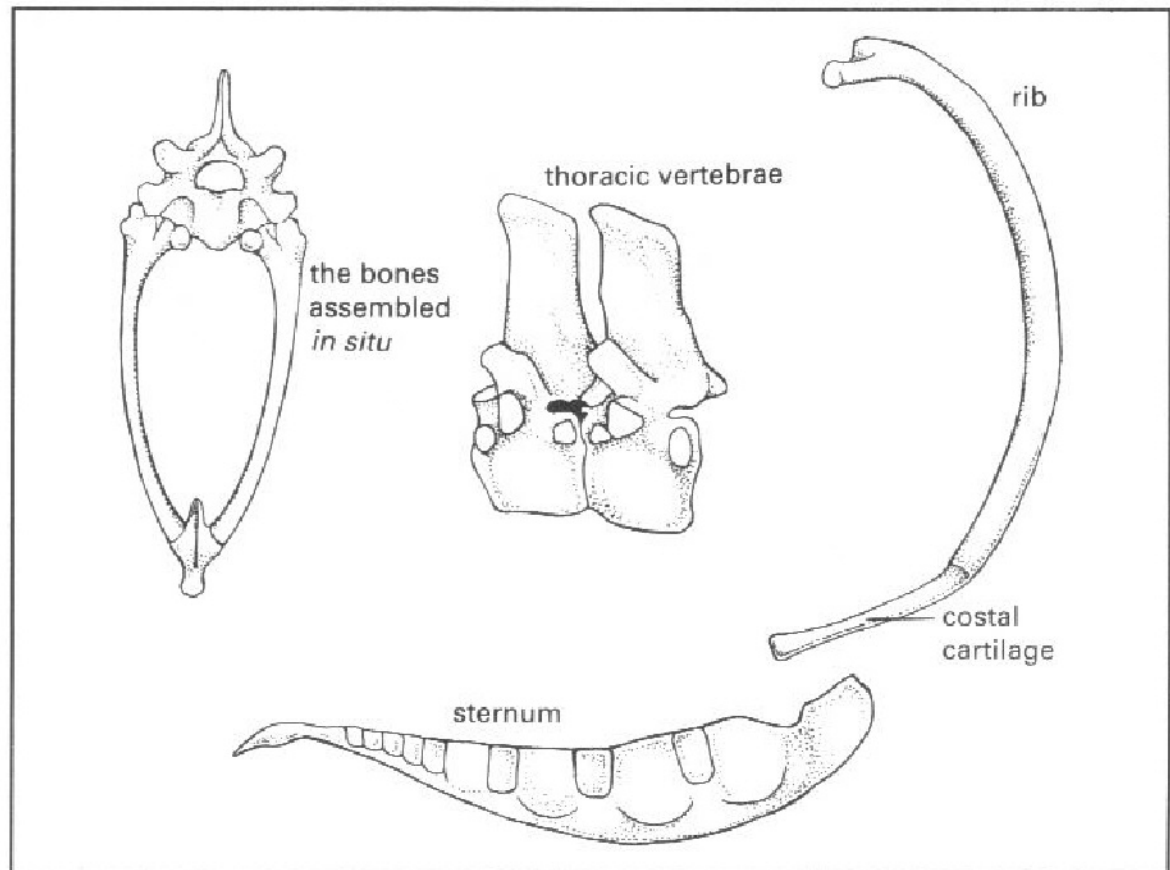
There are normally eighteen pairs of ribs, each thoracic vertebra carrying a rib on either side – or, in other words, one pair of ribs fits between each pair of thoracic bones (Figure 5.1).

A rib is an elongated, curved and highly elastic bone. At its lower end it carries a

prolongation in the form of a rod of cartilage, the costal cartilage. The first eight pairs articulate through their costal cartilages with the sides of the sternum (breastbone), and are termed sternal ribs. The last ten pairs do not articulate with the sternum.

The first rib, although the smallest, is important since it carries on its anterior edge grooves which are imprints of the nerves of the brachial plexus, a collection of large nerve trunks which supply locomotory and sensory impulses to the fore-

Figure 5.1 *Bones of the ribcage and sternum*



limb. If this rib is injured during accidents or falls, the resulting swelling may put pressure on some of these nerves causing muscular paralysis and skin desensitisation. The commonest type of damage is represented by radial paralysis, often termed dropped elbow. In this situation the horse cannot bring the lower part of the limb forward and so the knee remains flexed and the foot drags along the ground at the toe. At the same time the elbow, lacking muscular support, drops below its normal position.

Anatomy of the Sternum

The sternum forms the floor of the thorax or chest, and is held in position by the first eight pairs of ribs. It is long, narrow and canoe-shaped but is not actually a single bone.

It is made up of a number of distinct bony segments connected by intervening cartilage in the young subject, a great deal of this remaining throughout life. The hinder end of the sternum is drawn out into a flat, heart-shaped cartilage which forms the floor at the front end of the abdomen and gives attachment to the sternal fibres of the diaphragm, the muscular partition between thorax and abdomen.

Surface Examination

The ribs are examined for any signs of fractures, or bony growths, and are observed in movement as the horse breathes in and out. A hand is run between the forelimbs along the ventral aspect of the sternum for evident defects, skin growths, infections and girth galls.

The muscles at the front of the sternum – the pectoral muscles – are often injured and signs of atrophy are not uncommon. Some people inject horses in this region

and signs of needle abscesses or deep tissue injury are looked for.

Anatomy of the Forelimb

The forelimb (Figure 5.2) is not attached to the body by bone, nor by anything firmer and harder than muscle and ligamentous material; the horse has no clavicle (collar bone). One advantage of this is that the muscles holding limb and body together are able to absorb concussive forces transmitted upwards, which would go to the spine if this were more solidly united to the body.

From above to below the bones of the forelimb are:

1. The scapula, which extends from the withers to the shoulder joint.
2. The humerus, reaching from shoulder to elbow.
3. The radius and ulna, extending from elbow to knee (these two bones are fused together in the horse).
4. The carpus or knee, made up of seven bones most of which are flattened and fitted with wide, smooth articular surfaces.
5. The metacarpal bones, only one of which is fully functional (the small metacarpals on either side merely help to support some of the knee bones and represent the remains of two other digits possessed by horses in the past).
6. The phalanges, of which there are three in the modern horse:
 - a) single, undivided first phalanx (long pastern bone);
 - b) shorter second phalanx (short pastern bone) lying partly inside the hoof and partly above it at the coronet;
 - c) third phalanx (pedal bone) lying entirely within the hoof.
7. The sesamoid bones, being two proximal sesamoids at the back of the fetlock

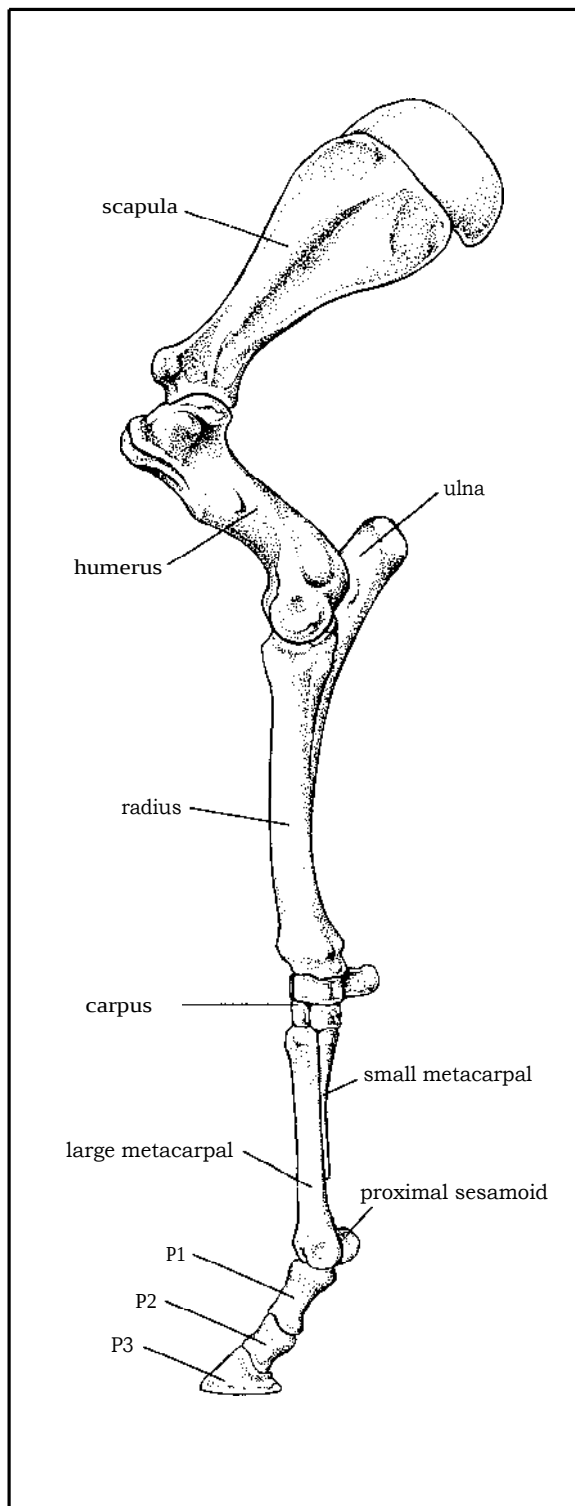


Figure 5.2 *Bones of the forelimb*

and the distal sesamoid, or navicular bone, at the back of the third phalanx.

The Scapula

A triangular, flattened plate attaching the forelimb to the trunk by means of muscles and ligaments, the scapula bone (Figure 5.3) partially covers, from the lateral aspect, the first six or seven ribs, from which it is separated by muscle.

The outer surface is triangular with the base uppermost. It is divided longitudinally by a prominent ridge, the scapular spine, which rests at about 50 degrees with the horizontal. This cuts the bone into two sections of which the posterior is the wider. The two cavities thus formed are filled by muscle which can be felt through the skin with ease.

At its lower end the scapula tapers to a neck. A projection lies in front of this occupying a very exposed spot close to the point of the shoulder where injury from contusion, especially among hunters and jumpers, may occur.

Between the head of the humerus and the tendon of the biceps muscle overlying it is the intertuberal synovial bursa, which protects and facilitates the movement of this tendon over the bone.

(A bursa is a sac containing synovial fluid which is interposed at a point of unusual pressure between a tendon, ligament or muscle and some underlying structure, usually a bony prominence. It facilitates movement and provides some measure of protection through its cushioning effect. Damage to the intertuberal bursa is a common cause of shoulder lameness.)

From the hindmost (or lower) edge of the scapula the long head of the triceps muscle takes its origin. This muscle inserts onto the point of the elbow. It is a prominent landmark of the horse's shoulder

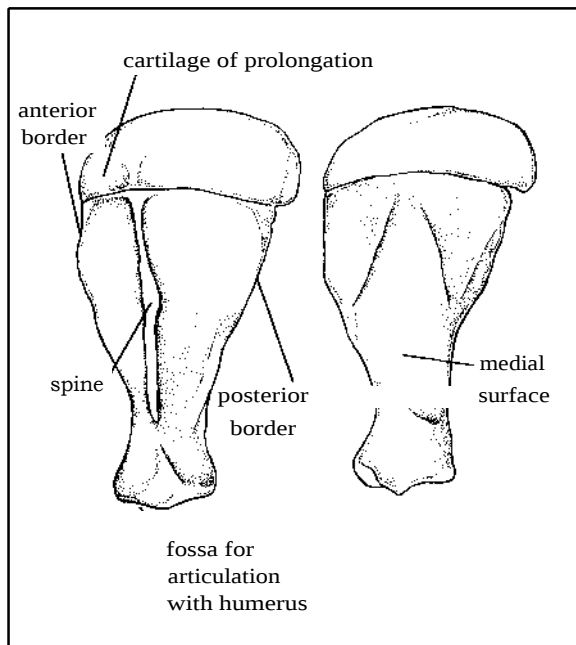


Figure 5.3 *The scapula; lateral view (left) and medial surface (right)*

region, and provides support at the front of the rider's shin bone.

The Shoulder Joint

The shoulder joint is formed between the lower extremity of the scapula and the articular head of the humerus. It is enclosed in a joint capsule (Figure 5.4). In spite of its considerable surface it is the only joint in the limbs which has no definite collateral ligaments. The two functions of these ligaments -- maintaining articular continuity and directing joint movements along habitual pathways - are taken over by numerous powerful muscles surrounding the joint. These help to hold the bones in apposition.

Surface Examination

The hand is run over the withers, noting

any evidence of pain, soft or hard tissue swellings, or traces of tracts or sinuses indicating a dormant fistulous withers infection. The presence of any such infection would automatically cause a horse to be rejected.

Pain is often detected in muscles in front of and behind the shoulder area, especially those muscles which suspend the front limb from the thorax. While localised discomfort on superficial manipulation might not be significant in a horse intended for gentle riding, the presence of pain in conjunction with bad action might cause a poor view to be taken of an animal intended for use in competition.

Sometimes the musculature over this region is atrophied (shrunk) or uneven in texture though it may not always be easy to detect by hand. A more positive view will be taken of this when the horse is being trotted.

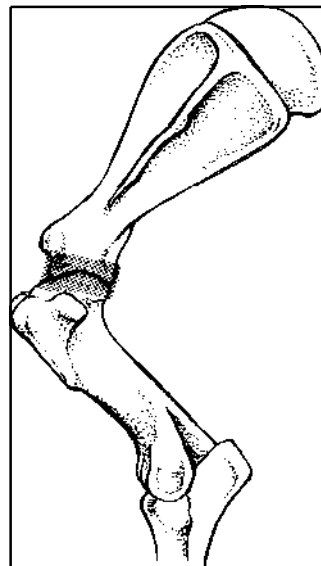


Figure 5.4 *Shoulder joint, showing extremities of bones and position of joint capsule (shaded area)*

Figure 5.5. A mare showing
sweeny (severe muscle wasting) of
the left scapular area



Figure 5.6 Enlarged detail of the condition above



Figure 5.7 A similar condition as that above and
opposite, on the right shoulder of a gelding

The area of the shoulder joint is felt for evidence of heat, and painful swellings of the synovial bursa at the front are noted.

Lameness of the shoulder joint, contrary to common belief, is not that usual, with the possible exception of osteochondritis dissecans (OCD), although lameness caused by injury to muscles in the region is very common (Figures 5.5, 5.6 and 5.7).

The Humerus

Although the humerus (Figure 5.8) is one of the strongest bones in the body it is sometimes shattered during a gallop as the result of imperfect muscular synchronisation. It is positioned obliquely in the limb between the scapula above and the radius and ulna below and its body gives attachment to several muscles. Its upper end is large and a substantial pad of fat separates the biceps tendon from the shoulder joint capsule.

At its lower end the humerus has an oblique surface for articulation with the radius and ulna. On the hind surface of this there is a large excavation, the *olecranon fossa*. This fossa receives the anconeal process of the ulna when the elbow joint is extended; this limits the extent of movement between the two bones and acts as a locking device in the stay apparatus – a system of ligaments and muscles that allows the horse to rest while standing – in much the same way as the patella does in the hind limb.

The Radius and Ulna

The radius of the horse is larger than the ulna (Figure 5.9) to which it is united by ligament in the young animal, and rigidly by solid bone in the adult. In the normal standing position the radius is held almost

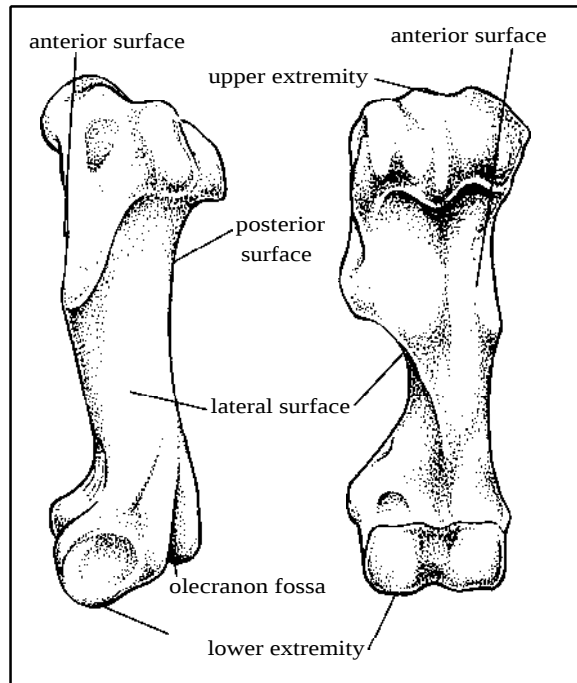


Figure 5.8 The left humerus, lateral view (left), and the right humerus, front view (right)

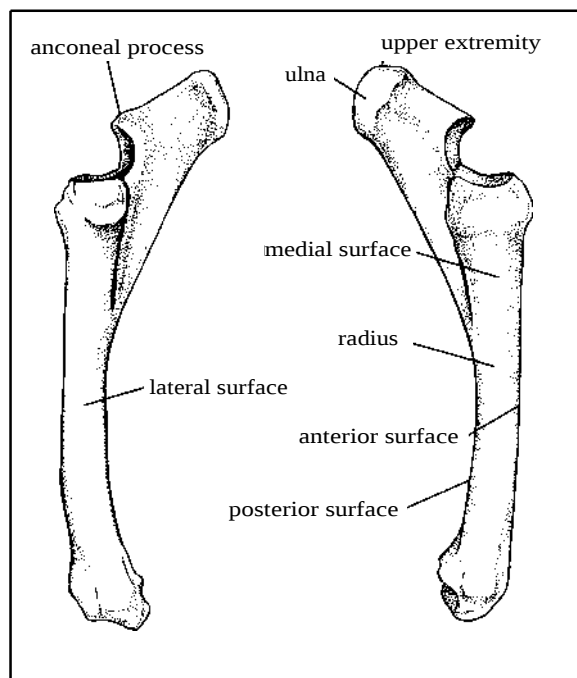


Figure 5.9 The left ulna and radius

vertically and the angle between the obliquely inclined humerus and the radius at the elbow is 145 degrees. It is a bone that also gives attachment to numerous muscles.

There is no movement between radius and ulna in the horse - in humans the bones move freely on one another enabling the palm of the hand to be turned upwards (supinate) or downwards (pronate).

The upper end of the radius forms an articular surface in conjunction with the ulna; this is moulded on the lower articular surface of the humerus. The lower end has an articular surface carrying several facets which correspond with those of the upper row of carpal or knee bones.

Whereas in man, and most other animals, the ulna is larger than the radius, in the horse it is small and short apart from its hindmost large projection, the olecranon process. This is a prominent structure projecting upward and somewhat backward behind the lower end of the humerus forming a lever arm for the extensor muscles (triceps) of the elbow.

The ulna is noteworthy in having no central marrow cavity which other long bones of the limbs possess. Its body is a triangular portion of bone with its apex at its lowest part a little above the centre of the radius.

The Elbow Joint

The elbow, like most other limb joints, is a hinge joint (Figure 5.10). It acts freely in one direction, without lateral movement. The middle position, or the position of maximum joint stability, lies between 140 and 150 degrees dorsal angle - the normal standing angle.

During elbow flexion the collateral ligaments of the joint loosen and the radius and ulna do not move in the exact plane of the humerus, but rotate a little outwards

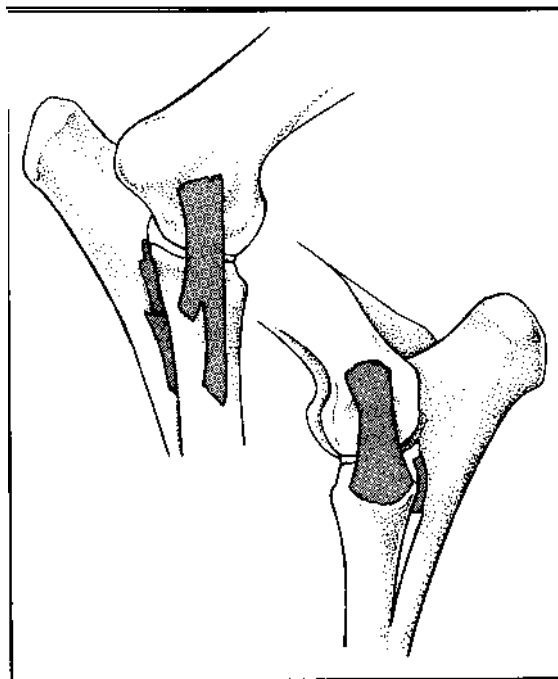


Figure 5.10 *The elbow joint showing lateral ligaments (shaded area), nature of articulation and angulation of bones*

around the anatomical axis of the radius. When this peculiarity is overpronounced the horse throws its forefoot a little outwards during elbow flexion especially when trotting. It is then said to dish.

Owing to the passage of the anconeal process into the olecranon fossa of the humerus, aided by ligaments and muscle, overextension of the elbow joint is not possible. The bones of the arm and forearm cannot therefore be brought into the same straight line.

Epiphyses and Diaphyses

It should be appreciated here that long bones in the limbs carry articular portions (epiphyses) at their extremities which are united only by cartilage to the main shaft of the bone (diaphysis) in the young (Figure 5.11). The final solidification of

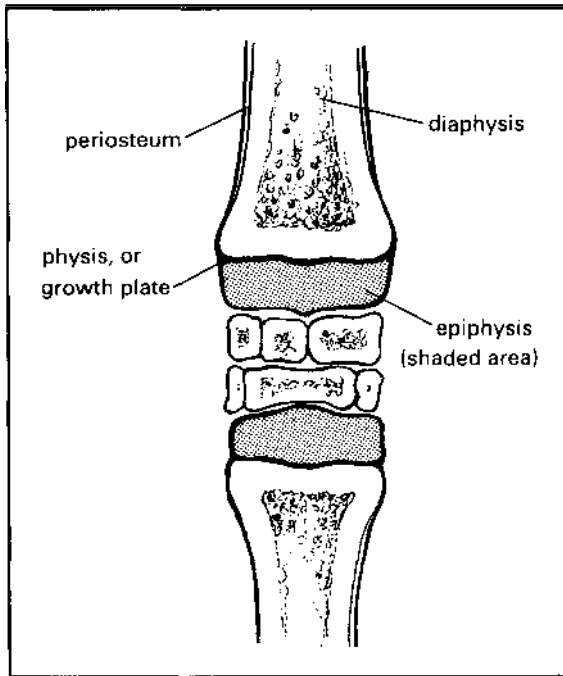


Figure 5.11 Bone plate development

these may not take place until the animal is approximately two years old and in many instances is not complete until four. Some horses will be seen to grow into their fifth and sixth years, indicating that bone growth and development is not complete in these until that time. Abnormal development of the epiphyses is often evident above or below the knee, and in the region of the fetlock at the lower end of the cannon bone in immature horses.

Surface Examination

The hand is now quickly moved over the humerus and along the triceps to the point of the elbow, where note is made of scars, heat or soft swelling. Sometimes the swelling in a capped elbow might be slight and would be felt with ease by hand where it might not be noticeable to the eye. There might be no lameness; lameness is not

uncommon, however, and the condition can be slow to heal, especially if there is infection of the bursa involved. In cases of capped elbow it is usually the inner heel of the shoe which causes bruising by making contact with the point of the elbow while the horse is lying down.

Down the forearm to the knee, the muscle outline should be strong and well developed with no evidence of wasting, or old wounds that might have caused adhesions to develop between the structures.

The Carpus or Knee

There are usually (Figure 5.12) seven car-

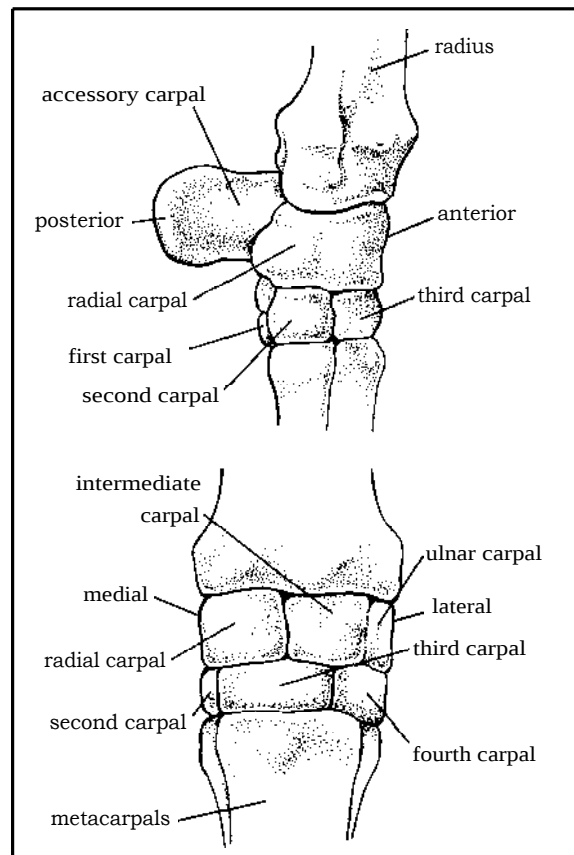


Figure 5.12 Left carpal bones

pal bones, but sometimes eight, arranged in two rows one above the other. The bones of the upper row are: radial carpal, intermediate carpal, ulnar carpal and the accessory carpal at the back. Those of the lower row are: first carpal, second carpal, third carpal and fourth carpal.

The accessory carpal does not bear weight directly, being a sesamoid bone which is interposed in the course of the tendons of the carpal flexors. It enables these to work at a mechanical advantage giving greater leverage since the bone takes on the role of a pulley-block.

Movements of the Knee Joint

The knee can be considered as another hinge joint in that it moves only in one direction, that of flexion and extension, without lateral or rotatory movements. When the knee is flexed with the foot close to the elbow, the joint can be seen to be a compound one containing three subsidiary joints. A gap forms at the front between the radius and the upper row of carpal bones (radiocarpal joint); a second gap between the two rows of carpal bones (intercarpal joint). A third gap is hardly noticeable, that between the lower row and the metacarpus (carpometacarpal joint).

During extension of the horse's knee, movement is arrested when the large metacarpal bone comes into line with the radius – this happens because the back of the knee is strongly supported by ligaments. These ligaments are continued downwards behind the knee as the inferior check ligament to blend with the deep flexor tendon behind the cannon. This arrangement is part of the stay apparatus, already mentioned.

The carpal joints are set slightly obliquely so that during knee flexion the foot turns outwards a little from the central

plane of the forearm. When the knee is fully flexed the strong collateral ligaments relax sufficiently to permit slight movement of the foot outwardly and inwardly (abduction and adduction).

The tendons of the extensor muscles of the foot pass over the front of the knee enclosed in synovial sheaths to ensure smooth passage. A synovial sheath differs from a bursa in that it is a two-layered structure that surrounds a tendon; between the layers is the synovial sac which contains the synovial fluid. The two layers can glide over one another freely being lubricated by the synovial fluid between them. These tendons can be felt by hand, and if their synovial sheaths become distended with fluid their positions can easily be seen.

Surface Examination

It is critical to examine the knee of the horse for soundness (Figure 5.13) and any abnormal heat or swelling will mean rejection or further investigation, perhaps radiography.

The knee itself should be clean and unblemished with no heat evident, no roughness or soft swellings, and the ligaments, bursae and sheaths of the area will preferably not be enlarged. Any decision on these will have to be objective as some swellings inhibit movement while others are unlikely to interfere with the future usefulness of the animal, even for racing.

A horse I attended recently had damaged a knee badly while running in an earlier Grand National. On examination at one of the university hospitals he was given a hopeless prognosis and the owner was advised to have him put down. Four years later, he is still running races and has never been lame from the day he got over the initial injury. The knee still looks abnormal and the flexibility of the joint is



Figure 5.13 *Enlargement of the knee. Such a condition may require radiography if any restriction of movement were noted. However, the condition could be recent, caused by a blow in which case it may have little significance*

less than that of its partner but it does not prevent him from jumping or racing with some effect, and enjoyment.

Scars on knees worried our ancestors more than they do us today. Perhaps that is because we have far greater means at our disposal to help animals recover from wounds and other superficial injuries. Besides this, the kind of surgery being performed on knees now means a great many horses which would formerly have been retired with small bone fractures, and spurs, are able to continue with success. However, the incidence of these injuries has increased significantly in race-horses and some credence is given to the suggestion that many are caused by banging knees on the front of starting stalls. A certain number are also due to immaturity, no doubt, as well as bad conformation.

I recently examined a horse that was competing well in three-day events despite signs of slight arthritis on radio-

graphic inspection. While the animal could not be passed as sound, a decision had to be made in conjunction with the buyer, who eventually decided against the animal. The critical factor was the effect such a lesion would have on the horse when landing after a jump, when pain could cause the knee to buckle resulting in a nasty fall. This horse knuckled occasionally on uneven ground at the trot. There had to be a risk, therefore, that he would be unstable, sometime, over a jump.

Still, while one buyer did not take the horse, another, on the basis of a different opinion, did. It all depends on the individual and how badly the prospect of success in competition is yearned for. The animal had ability and that was what gave him value.

The lower part of the limb, from the metacarpus down, will be dealt with separately because the anatomy is similar in fore and hind limb.

6

The Lower Limb

Many sources of lameness are concentrated in the lower limb. The manual examination will be especially significant in this area.

The Metacarpal Bones

There are three metacarpal bones - the cannon and two splint bones (Figure 6.1). The splint bones, or small metacarpals, together with their attendant digits, have regressed over the centuries until they now serve no practical purpose other than as support for some of the carpal bones. Having said that, it has been known for legs to fracture after surgical removal of a

full **splint bone**. The digits now represented by the splint bones are equivalent to the index and ring fingers of the human hand, while the large metacarpal or cannon bone is the equine equivalent of the middle finger.

The small metacarpal, or splint, bones represent abortive long bones lacking any central cavity. The inner is usually larger than the outer, but each is three-sided and slightly curved with the concavity directed outwards. The upper ends aid in the support of the lower row of carpal bones. The lower end of each terminates in a small rounded button.

Surface Examination

The shaft of the large metacarpal is slender but capable of carrying a great deal of weight. The term 'bone' is applied by horsemen and judges referring to this region of the horse. While the measurement of bone has its limitations there is evident difference in the external dimensions from one animal to another. The size is a guide to ability to bear weight and stand up to work on hard surfaces; it is an **important aspect in judging Thoroughbred foals and yearlings for purchase**, as light-boned types are less likely to stand up to the rigours of two-year-old racing. A long narrow cannon bone is inevitably weaker than a short one of greater circumference. To a degree, the

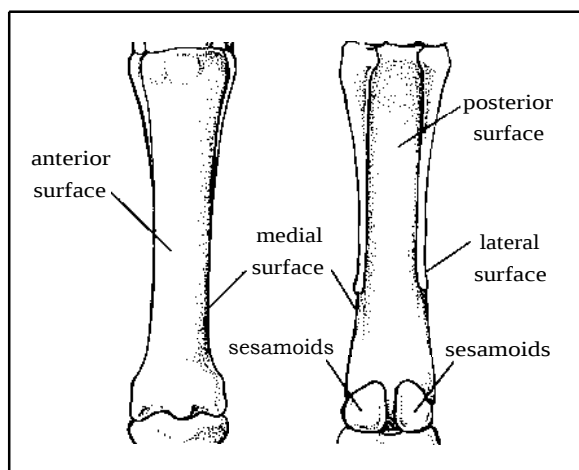


Figure 6.1 *Large and small metacarpals of the right forelimb*

same applies for non-thoroughbreds, as bone relates to substance and is an ultimate gauge of the weight-carrying capacity of a horse.

The lower end of the large metacarpal has two articulating areas; one that articulates with the first phalanx, a second articulating with the proximal sesamoid bones at its rear. The hind surface of the bone is flat from side to side and with the splint bones forms a wide groove that houses the suspensory ligament.

Up to three or four years old, the union between large metacarpal and splint bones is fibrous and some up and down movement is transferred to the splint bones from the knee during locomotion. This movement, especially near the union between the bones, may give rise to the condition known as splints (Figure 6.2) – a frequent cause of lameness in young horses. However, it is a condition which usually recovers when the bones become firmly fused. The condition is caused by:

1. Heredity.
2. Conformation.
3. Faulty shoeing and foot preparation.
4. Concussion resulting from excessive exercise on hard surfaces.
5. Blows or other injuries.
6. The pressure exerted on the bones by the weight of the horse coming down through the knee.

Inflammation of the periosteum covering the large metacarpal bone may give rise to the condition known as sore shins. This results from concussion but may also be influenced by the pull of the tendon inserted onto the head of the large metacarpal bone. It is a condition which is more common in young, immature horses, though some animals may be prone to it throughout life. If the condition is exaggerated, with marked enlargement of the front profile of the bone, it is called bucked shins.

The knees, shins, tendons and hocks



Figure 6.2 A large splint

may have firing marks, and the cause for these should be ascertained. Firing marks are generally recognised as patterns of stripes or spots which have resulted from cauterisation (burning) of the skin with hot irons as a surgical procedure. Many are highlighted by the growth of white hairs.

While some horses may have been fired in the past for preventive purposes, firing of knees was often associated with chronic injuries which may not have cleared up. Firing has been common for sore shins and the marks in an older horse may have little significance at a later time. Firing of tendons usually indicates that there has been tendon trouble and the critical factor here is to ascertain the future use of the animal and how long it is since the original injury occurred. It is also useful to know what the horse has done in the meantime.

It should be said here that the firing of horses is now declared unethical conduct for veterinary surgeons practising in Britain. However, this does not mean that firing marks will disappear from the horse population overnight (Figure 6.3).

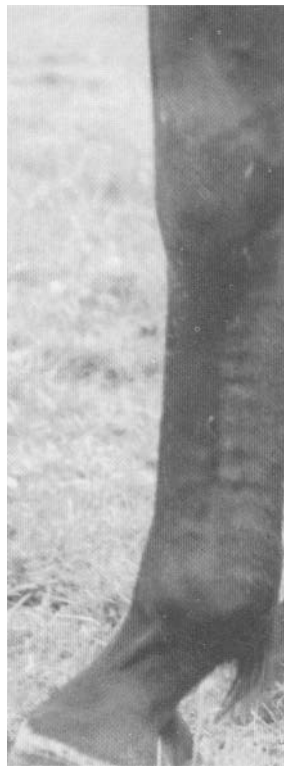
Splints are most commonly found on the inner side of the cannon area, between the medial and large metacarpal bones, but they can also occur on the outer side of the leg. They vary in size and extent and are very often the cause of lameness, especially when forming. They may be particularly troublesome if they encroach on the knee or impinge on the tendons and suspensory ligament. Most splints are not considered to make a horse unsound, though this will depend on the individual case. If extensive, a splint could cause a horse to be rejected, though presence or absence of lameness could be the deciding factor. The presence of any splint would

have to be mentioned in a certificate, even where it was considered of no clinical significance.

I recently examined a young unbroken horse being sold as a potential top-class showing animal. It had a smallish splint which, in my view, was a blemish it was not entitled to carry in the circumstances. A heated dispute (about the description) was saved when the horse showed lameness on a hard surface. The potential buyer was also of the opinion that a horse of that description should not carry a splint.

Heat in any part of this area will be significant. At the back of the upper metacarpal region, heat could indicate injury to the check ligament, where this attaches to the deep flexor tendon. Localised heat, even in the absence of overt lameness, will usually cause the examination to be abandoned.

Figure 6.3
*Horse with
fired tendons*



Tendons

Tendons are strong, fibrous structures that are attached to bone at their distal end; they act in unison with their attached muscle bodies to bear weight and take stretch. The muscle body is elastic and capable of contraction and relaxation; the tendon has little elasticity and is almost rigid when compared with muscle. Muscle fibre is more delicate and more capable of being strained than tendon, however, the difference in their respective healing properties makes injury of tendon a great deal more serious than muscle injury for the horse.

The tendons of the superficial and deep flexor muscles are outstanding features of the anatomy of the leg (Figure 6.4). The superficial tendon begins above the knee and is joined by a strong fibrous band, the radial or superior check ligament, which fuses with it at the back of the knee. It

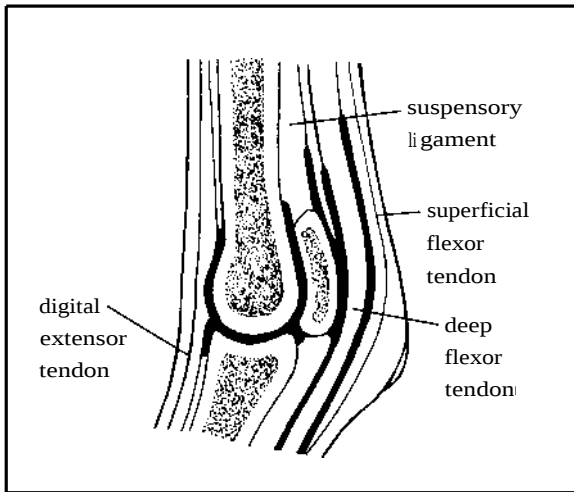


Figure 6.4 *Tendons of the forelimb*

then continues down through the carpal canal in the carpal synovial sheath. In the cannon region it flattens and then widens into a ring above the fetlock through which the tendon of the deep flexor muscle passes. The superficial flexor tendon divides into two parts below the fetlock, and attaches on either side of the hinder part of the first and second phalanges. Through the fork thus created the deep flexor tendon passes, within the digital synovial sheath, to be inserted into the sole of the third phalanx at the semilunar crest. The navicular bursa is interposed at this point between the deep flexor tendon and the distal sesamoid bone.

The two flexor tendons, one overlying the other, can be felt easily, but it is not always simple to separate them by touch. Neither are these the only structures existing behind the metacarpus between bone and skin. The deep flexor tendon is united to the back of the knee by a 10 cm (4 in) fibrous band, the subcarpal or inferior check ligament. When excessive strain falls on the deep flexor this ligament takes part of the weight and often becomes injured.

Between the deep flexor and the cannon bone there is the suspensory ligament.

It is easier to distinguish these various structures by touch if the foot is lifted and the fetlock, pastern and coffin joints slightly flexed. In any instance in which lameness is present each separate structure may be involved.

Causes of Injury

The fact that the horse is a soliped (an animal whose hoof is not cloven) with only one effective digit per limb is an important factor in tendon injury. It means the strain to the tendons and ligaments of the lower limb is greater than if that were shared by other digits (as with older ancestors of the modern horse). Also, the dynamic nature of the horse and the special stresses of racing and jumping mean that injuries occur at the weakest point when a limb bears weight.

At the instant of ground contact, at virtually any speed or gait, the influence of concussion rises up the limb and is opposed by the force downwards due to the weight of the body above, and, perhaps, that of a rider. Stress is applied to the joints most commonly when the bearing line from the ground deviates from the perpendicular, and injury occurs. Also, when the limb is in full extension and weight is borne, the maximum stretch of tendons occurs.

Any injury to a muscle that effectively limits its stretch will automatically place a greater burden on the associated tendon. Major factors in repeated tendon injury are the structural anatomy of the leg and the precipitating cause of the injury in the first place. Of course, ground influences – be it hard or soft, even or uneven – also contribute to injury.

It is important when making a decision about existing tendon injuries (Figure 6.5) to have some idea as to the likely cause, especially if this was structural. If the

Figure 6.5
*Bowed
tendon
showing
swelling over
the superficial
flexor tendon*



the limb is not normal at the time of examination, the prognosis is poor, unless there is an evident fault that can be corrected. Sometimes the problem can be aggravated by the common tendency to lower the heels of the foot excessively. It is not difficult to appreciate how this adds to the strain on the tendons.

Common Factors Involved

1. Overuse when the horse is unfit. This includes the common mistake of trying to get horses fit too quickly.
2. False (alternating soft and hard patches), hard or bottomless ground.
3. Jumping drop fences.
4. Slipping up.
5. Bad conformation: long weak pasterns, back at the knee, poor tendon conformation, low heels.

6. Muscular injury, because this reduces the elasticity of the muscle/tendon unit and alters the shape of the leg.
7. Overreaches.

Tendon injuries are seen in all kinds of ridden horses, though they are most common by far in racehorses and eventers.

The most common site of injury is on the flexors of the foreleg, in the area between the back of the knee and the fetlock. Different structures may be damaged here and the degree of injury varies from mild bruising to complete rupture of tendon fibres.

Surface Examination

As many horses with repaired tendon injuries compete sound, often without further complication, a decision on the purchase of a horse with evident old tendon scarring will depend on a number of factors. Inevitably, the leg must be cold with no painful areas and certainly no heat. Evidence of adhesions will very often be indicated by restriction of natural movement of structures on one another, though adhesions between a tendon and its sheath will not be detected so easily.

Inflammation of tendons gives rise to swelling, heat and pain. Ultimately, repair of the strained tendon fibres is accomplished by the laying down of fibrous tissue, and a subsequent change from the normal fibre arrangement that is associated with tensile strength. This fibrous tissue has a habit of contracting after union has been effected, with the result that the tendons can lose their elasticity and become effectively shortened. The consequence is that some degree of fetlock flexion may occur as a permanent feature, and it is possible that there may also be some forward deviation at the knee. The fetlock and foot may then assume differ-

ent positions in relation to the rest of the limb and to one another. This may well lead to altered placement of the foot, and is a common cause of secondary lameness thereafter.

It should be understood that these changes may not be easily judged by the naked eye and the degree of deviation referred to is very often marginal. However, their influence on the animal's future history can be quite marked.

A slight strain may affect the sheath and fibres of the superficial flexor tendon only, resulting in heat and a little swelling. There may be no lameness, but if the leg is picked up and the area subjected to slight finger pressure, pain will be noted. It is important to distinguish between real pain and the resentment some horses show to handling. Where there is an injury the pain will be confined to the area in which there is heat. If in doubt, compare the reaction with that of a sound leg.

A more severe strain with rupture of fibres will cause greater swelling, which may give the leg a bowed appearance and span most of the length of the tendon. Lameness is often present at the walk and, again, pain is marked on finger pressure.

Rupture of a whole tendon will cause the fetlock to be dropped below its normal position, and, naturally, there will be marked lameness.

If both the superficial and deep tendons are ruptured, the fetlock will have lost the greater part of its support and may drop almost to the level of the ground. The horse will be in acute distress and the pain will cause it to sweat and blow.

The presence of heat in a tendon is a warning at any time that there is weakness. Trainers feel the tendons and joints of their horses every evening to detect early signs of injury and horses found to have any heat are treated to special care.

In any tendon injury it has to be appreciated that the mechanics of leg anatomy tends to draw the injured ends apart. The

greatest problem with slight injuries arises when horses are returned to work too soon, before the leg has had time to repair. There are occasions when animals with serious tendon injuries continue to compete effectively – however, they are so few as to be a distortion of reality. Every injury to a tendon should be taken seriously.

It should be remembered, particularly, that tendon injuries allied to other structural deformities of the leg (Figure 6.6), e.g. upward pulling on the fetlock or forward deviation of the knee, will dispose towards recurrence unless these problems are capable of being corrected independently – irrespective of how well the tendon may feel under manual examination. It should be the vendor's responsibility to do this and such an animal should only be



Figure 6.6. *Forward angulation of the right foreleg caused by the constriction of the annular ligament of the fetlock. Although the extent is slight, the condition is significant, altering the horse's stride*

bought with the clear understanding that its future is a gamble and the price should take this into account.

Furthermore, any reparative procedure – either medical or surgical – which leaves a horse with a visible swelling on the tendon is less likely to provide the strength to withstand training in the long term than one that does not.

Comment on Scanning Tendons and Leg Structure

While examination of tendon injuries with ultrasonic scanners has become more prevalent, it is unlikely that such an examination will become a routine part of soundness examination. If the leg is clean, unblemished and without heat, little is likely to be learned from such a test. If there are any of these symptoms, then the animal is unsound, though a purchaser may be prepared to complete a sale on the basis of future prospects for the horse and the influence a specific lesion has on the sale price. Needless to say, this would not have any influence on the sale of a mare for breeding, as tendon injuries are not hereditary, though the conformation that predisposed to them might be in certain cases. But, in the hurly-burly of a sales yard, scanning tendons is hardly a practical option at present.

The Suspensory Ligament

A ligament differs from a tendon in not having a muscular body attached to it. It is also less elastic and its function is to hold bones together or to act as a support to a joint.

Between the deep flexor and the cannon bone the suspensory ligament (Figure 6.7) is a flat, elastic band about 2.5 cm (1 in)

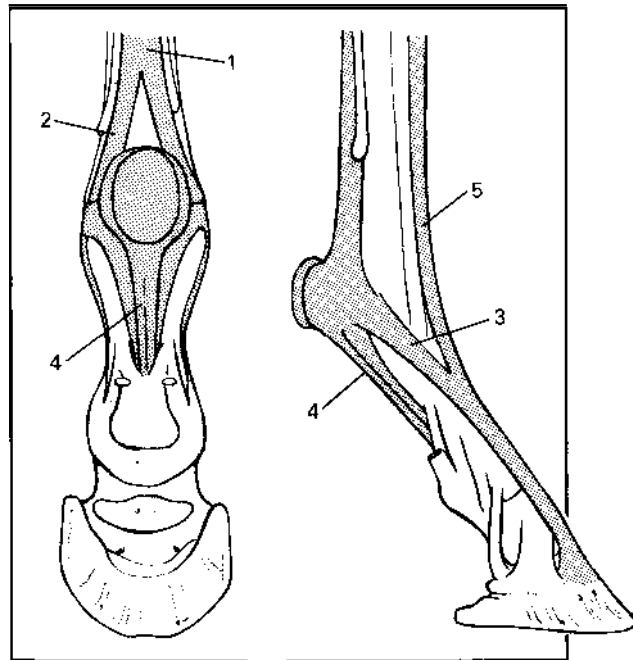


Figure 6.7 *Suspensory apparatus showing:*

- 1 suspensory ligament
- 2 branches to sesamoid bones
- 3 branch to extensor tendon
- 4 inferior sesamoidean ligaments
- 5 extensor tendon

wide which takes origin from the back of the knee, then passes down the limb, occupying the channel between the back of the metacarpal bone and the small splint bones. Like all structures behind the cannon it is also subject to strain.

At the level of the sesamoid bones it divides and sends two branches forward to join the extensor tendons on the front of the pastern. The rest of the ligament is attached to the sesamoid bones themselves. The function of the suspensory ligament is to suspend the fetlock and support the leg, although it is also concerned with preventing excessive dorsiflexion (overextension) of the fetlock.

The suspensory ligament is part of the stay apparatus; being a modified muscle, it contains some muscle tissue and possesses considerable elasticity. In support-

ing the joint it is aided by the tendons of both superficial and deep flexor muscles. Together with the proximal sesamoid bones it carries most of the weight of the horse at many stages of locomotion.

Injury to the suspensory occurs as a primary injury, probably due to overextension of the fetlock joint. Hard ground is also a factor in causing it. There is diffuse swelling of the full tendon area and pain on palpation of the ligament itself. The horse will be lame and have a short choppy stride at the trot. Heat and swelling may be marked, and is best felt with the leg picked up so that it can be distinguished from injury to other structures. There is no bowing of the outer tendons and no pain when the flexors are subjected to finger pressure. An injured suspensory usually has a soft feeling to it when compared with the ligament of a sound leg.

It is important not to confuse tendon and ligament injuries with infection of the same area, which can be equally painful and cause similar types of swelling.

The Fetlock Joint

The fetlock joint (Figure 6.8) is another

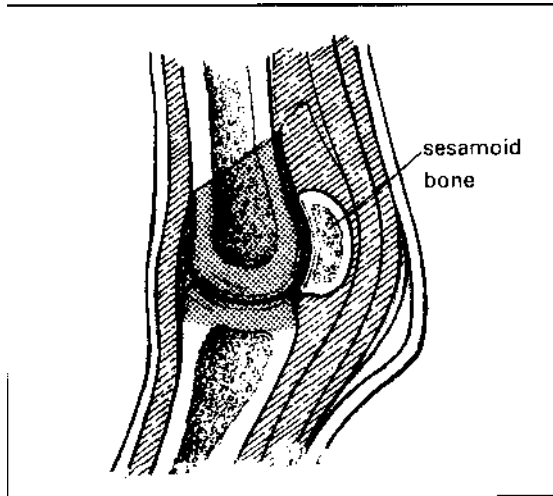


Figure 6.8 The fetlock joint (shaded area shows extent of joint capsule) with sesamoid bone adjacent

typical hinge joint, exhibiting only flexion and extension movements (Figure 6.9). In the normal standing position the joint capsule is extensive behind and allows for a great deal of movement. Overextension is limited by the suspensory apparatus, together with the fetlock's own collateral ligaments. Flexion is limited by contact of the sesamoid bones with the cannon.

As the fetlock bears more weight than any other limb joint its soundness is basic to the soundness of the animal. It is prob-

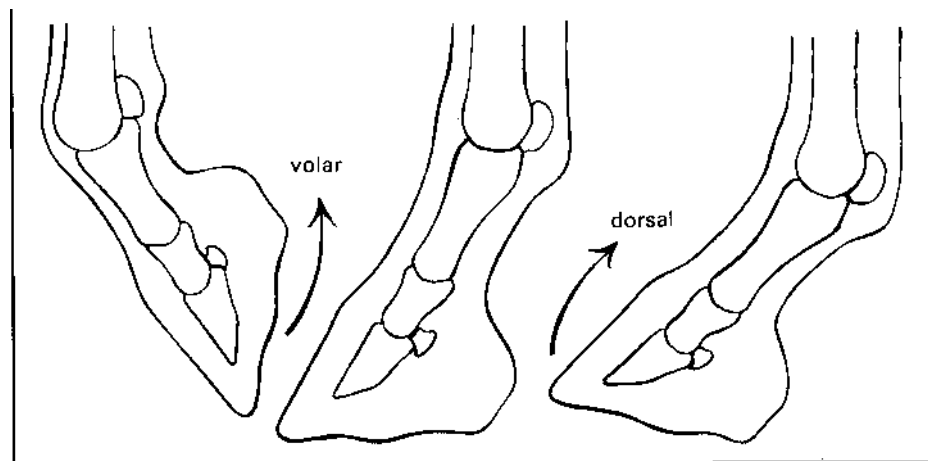


Figure 6.9 Phases of movement of the lower limb showing dorsal and volar flexion

ably the most significant joint in the absorption of concussion because of its position in the limb, the nature of its construction, and its relationship to other leg structures. Furthermore the influence it comes under from the weight of the animal at exaggerated points of the limb cycle (as when a leading limb bears weight when landing from a jump) tests its integrity to the limit. At this precise instant, the joint may be stretched so far as to actually touch the ground. This places all supports and their attachments under maximum stretch.

The Proximal Sesamoid Bones

These two small bones lie one on either side at the back of the fetlock, behind the lower end of the large metacarpal bone, with which they articulate. Each sesamoid is a three-sided pyramid, and moulded to correspond with the hinder end of the metacarpal bone at its lower end. The posterior surface of each lies beside its fellow to provide a smooth channel which is further covered by ligament. At this position the superficial flexor tendon is in the form of a ring through which the deep flexor glides, and the tendons are bound further by a ligament of the fetlock joint.

The sesamoids act together to form a pulley over which the deep flexor tendon runs. They are also bound into the suspensory apparatus by a number of very strong ligaments. The suspensory apparatus in conjunction with the sesamoids serves to increase the surface area of the fetlock joint and to receive the compression force transmitted down from the large metacarpal bone above.

It can be appreciated that the sesamoids are subjected to a great degree of strain on occasion.

However, it is also clear that nature has provided them with a very strong system

of bonding to protect them from the normal forces involved.

Surface Examination

The skin in this region is often inflamed if the condition known as 'grease' or 'mud-rash' is present. There could be cracks or fissures at the back of the fetlock or pastern and the extent of this would have to be noted. These conditions are most common in winter and on limbs that have extensive white areas; they would have to be very marked, with evident inflammation of the limb, to prevent a sale.

When examining a horse before purchase, it is important to decide if the basic conformation of the fetlock joint is such as would support the animal through its intended life. All the ligamentous and soft tissue structures associated with the joint need to give the impression of strength. The presence of any soft tissue swellings – windgalls – may well indicate weakness even in the absence of overt lameness, and should be viewed objectively. For showing purposes such swellings would have a negative value; but many older horses, on the other hand, will still compete effectively with windgalls that are cold to the touch, especially on ground conditions that favour them. In many cases, windgalls appear as a result of immaturity, of subjecting young animals to too much work too early, perhaps on hard surfaces that cause persistent jarring. Where only an individual joint is involved, this is more likely to have resulted from a wrench or twist, causing disruption to the supporting structures.

Heat in the fetlock has to be viewed with suspicion if not gravity. Heat at the back of the joint will usually indicate injury to the sesamoid bones and their ligaments and could mean fracture or minor injuries to bone at the point of attachment. In such a situation it is un-

likely an animal would trot sound without the use of painkillers, though there are phases and degrees of lameness and an animal that has been rested for a few days might not show lameness immediately on being trotted. Such injuries, however, are difficult to treat without intensive attention and there would be no guarantee a horse would recover fully from them.

Heat at the time of examination in any area is likely to cause immediate termination, and it would only be resumed where a full return to normality was evidenced. It is probable that radiographs would be taken on resumption in any case.

Bony swellings on the fetlock, even if cold, will be viewed with caution. While they may have originated in the distant past and the injuries suffered may have settled down fully, the joints in question would have to be subjected to radiography and the animal trotted extensively on different surfaces and gradients to test its soundness.

Heat and its Detection

When I refer to heat in these situations I mean heat that is detectable in the palm, or on the back of, the hand. It is a positive, unmistakeable, sign, but one that requires experience to recognise. All racehorse trainers routinely feel the legs and joints of their horses and most I have met are adept at detecting the first signs of heat; a talent which is critical to the prevention of more serious problems developing later.

There are now special instruments available designed to detect external heat and measure it. In my view these instruments are not the greatest discovery of our age. They cause a great deal of confusion and are a nuisance when placed in the wrong hands. In any form of clinical or diagnostic medicine there is no substitute for knowl-

edge and experience. Nowadays, technology is trying to circumvent this priority by producing direct forms of information that turn the novice into an expert. Life is never that simple, and it frequently happens that specific areas of heat represent secondary lameness. The real cause of the problem may be elsewhere, where there is no heat. Treating the heated area may provide temporary relief but only lead to further trouble later.

The Phalanges

There are three phalanges in the pastern and foot, numbered from above to below. The first two are discussed below. (The third phalanx is discussed later with the foot.)

First Phalanx (P1)

This is a long bone - defined as such because it has a central cavity - occupying an oblique position between the lower end of the large metacarpal and the upper end of the second phalanx.

Second Phalanx (P2)

This is a short bone without a medullary cavity and is therefore solid throughout. Its importance comes from being partly inside and partly above the upper limit of the wall of the hoof, and also being the first free limb bone to sustain concussion as the foot hits the ground. This is possibly why it is involved in the condition known as ringbone (Figure 6.10), where it projects above the hoof to support the coronet. True low ringbone - situated on the coronet - is not as common today as it



Figure 6.10 *Low ringbone formation*

once was, and is most likely to be seen in horses working on hard surfaces, like city streets. The condition in riding horses occurs frequently as a result of direct trauma.

The second phalanx lies somewhat obliquely and is supported along its posterior surface – as is the first phalanx – by the deep flexor tendon. The fact that it is not upright, and that it is supported by this tendon, probably does a great deal to lessen the concussion it is obliged to withstand.

The Pastern Joint

The pastern joint (Figure 6.11) lies between the first and second phalanges and is the least movable of the phalangeal joints; in the normal standing position it is

extended. Excessive dorsiflexion is prevented by the ligaments of the joint and by ligaments on the underside between the first and second phalanges. These latter ligaments thus have considerable importance in bearing weight at the back of the digit and help to support the joint.

Surface Examination

The pastern would normally be expected to be without blemish, although a small percentage of horses will show signs of unilateral high ringbone formation (Figure 6.12) which is most likely to have resulted from injury – such as might happen when placing a foot in a hole while travelling at speed. Very often these lesions are not significant to future usefulness once the initial lameness has passed off. However, repair can take a long time and it is always possible that some of the essential support structures **have been irreparably** damaged. Therefore, any judgement on

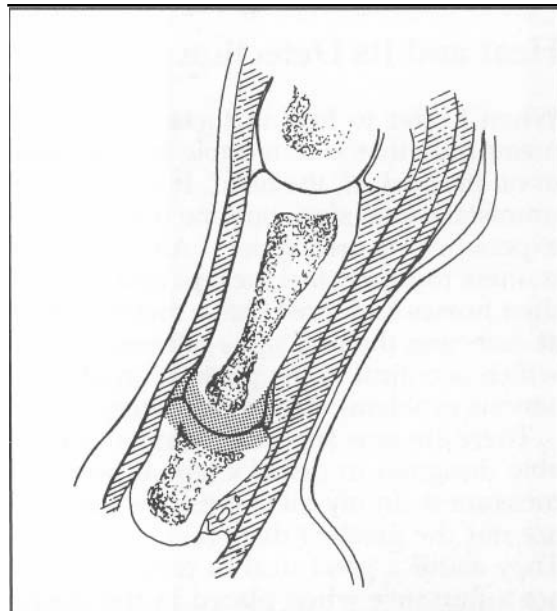


Figure 6.11 *First and second phalanges showing pastern joint (shaded area)*

the future soundness of such a lesion will depend on the horse's recent competing history, and will very probably require radiography to ensure there are no arthritic changes in the joint or joints involved.

Any other abnormalities of the region are taken into account. Cab-horse disease was an enlargement of the inner head of the first phalanx, caused by striking in horses with faulty action. It is not seen very often today. Particular note should also be taken in this region of any signs of scarring left after a horse has been denerved – a finding that would automatically call for rejection. Also, heat or thickening of tendons or ligaments would be treated with concern. If such thickenings were painful to touch and there was any influence on action, the horse would be unsound. Some long-standing injuries, however, will not affect a horse for normal

riding use, even if there is enlargement. These will be judged on merit.

The pastern continues the angle of the foot from the ground and should deviate neither back or forward from that line.

The Foot

The foot, as a common source of lameness, is critical to the soundness of the horse. It is a complex structure that merits detailed attention.

Surface Examination

From the aspect of soundness, the normal anatomy of the foot must be understood and, while most horsemen have a good basic understanding of the nature and outline, many people could do with a more detailed knowledge of the basic priorities of functional soundness. Firstly, the foot should be well rounded and expanded, preferably a pair with its opposite number (some horses may have front feet which are not paired but are still functionally sound and show no abnormality on radiographs). There should be no shrinkage at the coronet or in the wall, no indication of the foot becoming boxy or of the wall clinging tightly to the underlying structures through contraction or loss of natural growth. There should also be no evident swelling as might occur if there were a keratoma – a cancerous growth – inside the foot (Figure 6.13).

While it is arguable that pigment provides strength to the horn, lack of pigment in a foot is not an unsoundness, though I would have to say that I've seen more trouble with unpigmented feet, from ageing and disease, than in pigmented ones.

From the ground surface, the sole should be concave and the bars expanded.

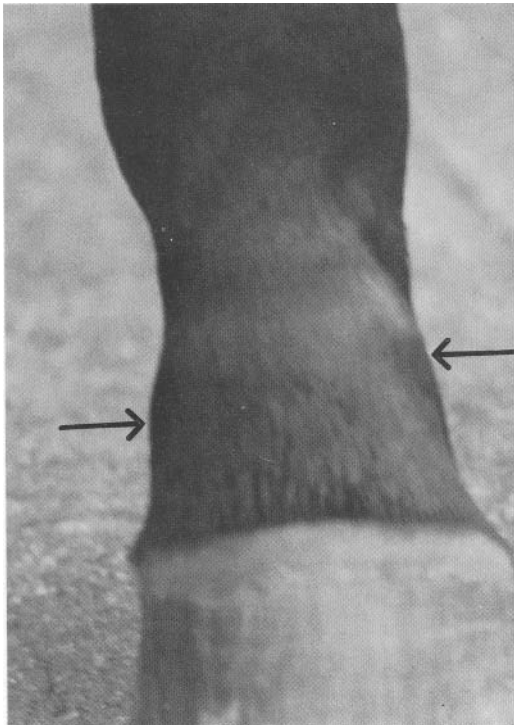


Figure 6.12 *Early high ringbone formation*

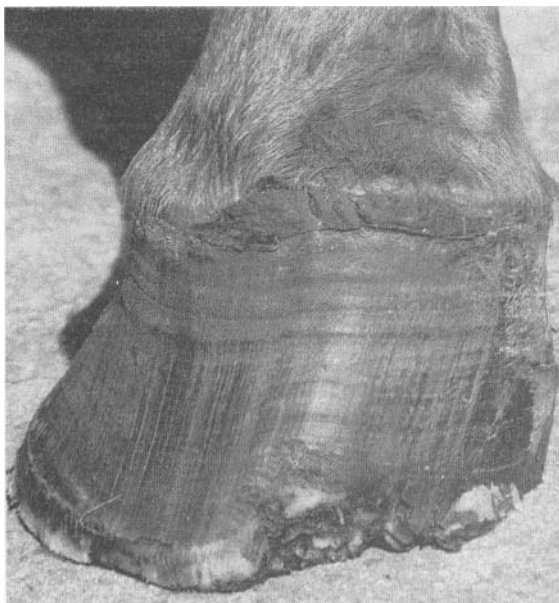


Figure 6.13 *Keratoma of the foot, marked by distortion of the wall*

The frog must be normal in its development, not small and shrunken and raised from contact with the ground. There should be no sign or smell of thrush, although the condition would not cause a horse to be rejected unless it was advanced, there were evident discharges, and the frog was tender to the touch.

The shape of the heels should show that these are well sprung and not tight onto the deeper structures. The heel should never be cut too far back as this changes the balance of the whole leg. It creates a greater strain on the tendons, the suspensory ligament, and also brings pressure to bear on the region of the coffin joint.

The foot must show that it is capable of holding onto a normal shoe without weight being borne on the sole and transferred to the soft inner structures. In older horses, there is a tendency for the foot to change shape and for the sole to drop. This in many cases is a natural ageing process, but its development is critical to the future usefulness of the animal. A foot

that cannot have a shoe placed on it without bringing pressure on the area inside the white line is likely to be a liability and have a strictly limited future usefulness. While it is possible that such a foot could be free of lameness if shod in a manner that minimises pressure on the sole, the reality is that it is now clinically abnormal and could not be passed for sale without serious reservations. Some such animals are kept going endlessly with understanding and the help of a good farrier, but many have shortened lives and the temptation is to ride them under the influence of painkillers, which, in my view, is never justified. A proportion of animals so treated will fracture bones either within the foot or in remote areas of the leg.

Such a horse could not be recommended for purchase except with due consideration – perhaps if it were going to a home where it might have a useful life without shoes, or maybe for breeding purposes.

Corns are a common condition of the foot, though they would be unlikely to cause the rejection of a horse unless there was lameness. They most commonly arise as the result of shoe pressure on the site of corn – the angle between the bar and the wall.

Where there is evident abnormality in the feet -- be this in one or both front feet (which bear more concussion than the hind feet and are therefore more likely to be affected by disease) – it is wise to have radiographs taken to detect the presence of bony changes. While the interpretation of these changes is sometimes controversial, advanced clinical signs with associated changes in external foot shape have to be taken seriously. The question is the future active life of the animal and the likely progression of such lesions in a horse that is not already lame.

Where there is contraction of the foot associated with internal changes demonstrable on radiographs the prognosis

is not good. And, it must be said, a high percentage of feet showing outward signs of change do have related internal changes.

Pedal osteitis is generally considered to be progressive although there is some success with treatment today (however, this would not be a consideration in a soundness examination). Likewise, changes in the navicular bone – very often exaggerated in significance when there is a good normal foot – could not be overlooked if the foot had changed shape and there were evident signs that the inner structures were being subjected to abnormal concussion. This is most likely to happen when the foot is contracting, the sole is dropping and the shoes are starting to bear on the sole. It can also happen with any other foot conformation that places pressures on the same structures.

Third Phalanx (P3)

The terminal bone of the limb much resembles the hoof in shape (Figure 6.14), but is very much smaller and occupies only a minor portion of the cavity within it. The front surface of the bone slopes downward and forward and is roughened and pitted by numerous holes. The deep flexor tendon is attached to it behind. Between the deep flexor and the upper part of the hind face of the bone is the distal sesamoid (navicular) bone; there is a bursa between these two structures.

Beneath the third phalanx and the deep flexor tendon there is a fibroelastic pad known as the digital cushion. This pad is moulded over the inner face of the horny frog. The purpose of the digital cushion is to act as a buffer and lessen concussion when the foot meets the ground.

The third phalanx is well supported within the hoof owing to the presence of sensitive laminae (Figure 6.15), coming

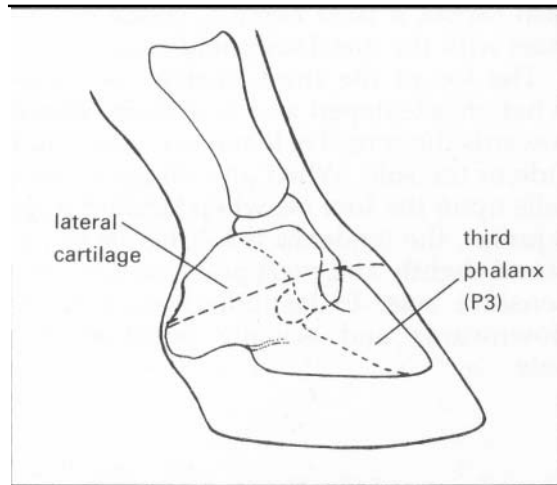


Figure 6.14 Cross-section of the foot

from the corium covering the bone, which interleave with horny, insensitive laminae lining the hoof wall itself.

The highest point of the third phalanx is the extensor process at the front. This gives attachment to the tendon of the common digital extensor which advances the foot and extends the fetlock and knee joints.

The articular surface is moulded to that of the lower end of the second phalanx. It

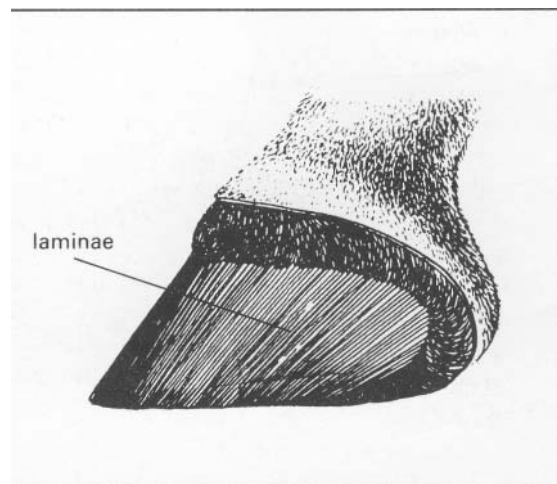


Figure 6.15 Sensitive structures of the foot (with the hoof removed)

also carries a facet behind, which articulates with the distal sesamoid bone.

The toe of the third phalanx is somewhat chisel-shaped and is directed down towards the sensitive laminae on the inner side of the sole. When any undue weight falls upon the foot (as when landing from a jump), the tendency is for the toe to descend slightly and exert pressure upon the sensitive sole. In laminitis it may rotate downwards and actually penetrate the sole.

Cartilages of the Foot

The angles of the third phalanx on either side give support to the cartilages of the foot. On the inner aspect these join up with the digital cushion and in front afford protection to the coffin joint. The upper border of each cartilage is thin and flexible

and can be moved sideways with the fingers. It bulges outwards every time weight falls on the heel and frog.

In older horses the cartilages often become calcified. They can be felt at the hind edges of the coronet above the heel and quarter, when the foot is lifted off the ground. It is easy to determine whether they are free and supple or if they have become calcified. The process of calcification commences at the front and is referred to as sidebone (Figure 6.16). Lameness may result, but the majority of horses exhibiting calcified cartilages are sound in action unless there is some other lesion present as well.

Occasionally sidebone development occurs in young horses and its importance is viewed on the basis of foot shape, lameness and the general development of the horse. Radiographs of the foot may need to be taken to see if there are changes in any other foot structures. It is most likely



Figure 6.16 *Sidebone*

to be caused by undue concussion, and lameness will generally disappear once the process of calcification is complete.

which the deep flexor tendon travels before it inserts into the third phalanx.

The Coffin Joint

The coffin joint lies within the hoof between the second and third phalanges. It exhibits a great degree of movement and so has a structure which approaches that of the fetlock rather than the pastern joint. On the underside the navicular bone takes part in the formation of this joint, and has a series of specific ligaments associated with it. In the normal standing position the joint is extended, overextension being limited by a suspensory apparatus and the deep flexor tendon behind (Figure 6.17).

External Anatomy of the Hoof

The hoof is the horny covering of the foot, divided into the wall, the sole, and the frog.

The Wall

The wall is developed by a downward growth of horn secreted by the cells of the coronary band, also called the coronary cushion. This is a ring of modified skin, covered with papillae which carry cells capable of secreting horn. Above the coronary cushion is a narrow groove separating it from a somewhat similar but smaller cushion known as the perioplic ring. This secretes a layer of waterproof varnish which is intended to cover the wall to prevent loss of moisture with an accompanying shrinking of the hoof. The periople is often rasped off by the smith when finishing off the foot after shoeing, but, clearly, it is an exercise that makes

Distal Sesamoid or Navicular Bone

The distal sesamoid or navicular bone is small and shuttle-shaped, lying behind the second and third phalanges. The tendon surface of the bone is directed downwards and backwards. It is covered by fibrocartilage to make a smooth bed over

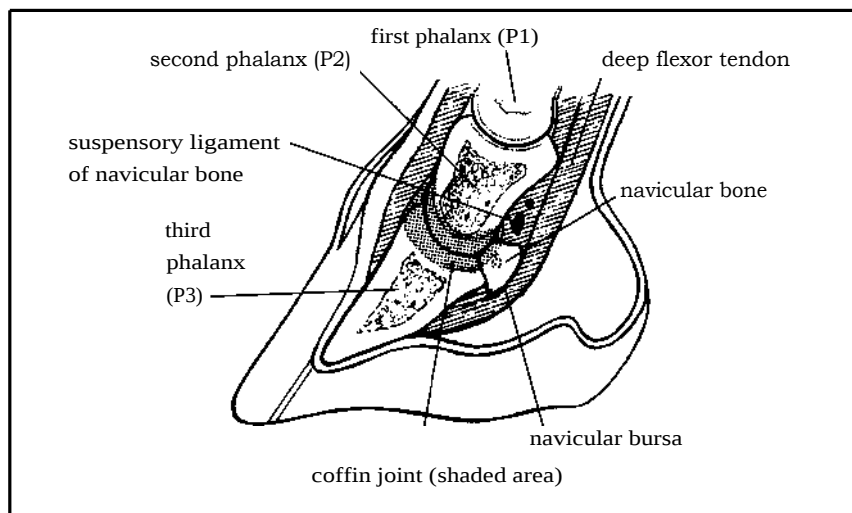


Figure 6.17 Lower limb in cross-section. The navicular bursa is situated between the bone and the deep tendon

little sense. The rate of secretion from the coronary band permits the complete replacement of the horny wall in a period of 8 to 10 months.

When the rate of growth is irregular, alternating ridges and circular depressions encircle the wall. The influence of diet also produces rings. When horn growth is accelerated, as when out on spring grass, raised grass rings are produced. When horses rough it in winter, depressions in circular form may appear later. Deeper and wider circular grooves follow an attack of laminitis (Figures 6.18 and 6.19).

The Sole

The sole constitutes the greater part of the ground surface of the hoof. It is crescent-shaped and arched in relation to the ground. In front it presents a rounded border by which it is intimately connected with the lower border of the wall. In the clean, unshod foot the line of union between wall and sole is quite visible just inside the inner margin of the wall and is known as the white line. At the hinder part of the sole it can be seen to turn inwards and forwards to form an inner lining to the bars. When nailing on a shoe it is important that the nail neither punctures this division between horny and sensitive parts, nor presses unduly on it to cause nail-binding.

It is at the white line that separation occurs in seedy toe, a condition which indicates degeneration in the horn and is commonly a sequel to laminitis. Any animal found to suffer from the condition would not be passed sound.

The Frog

The frog is a wedge-shaped, spongy mass

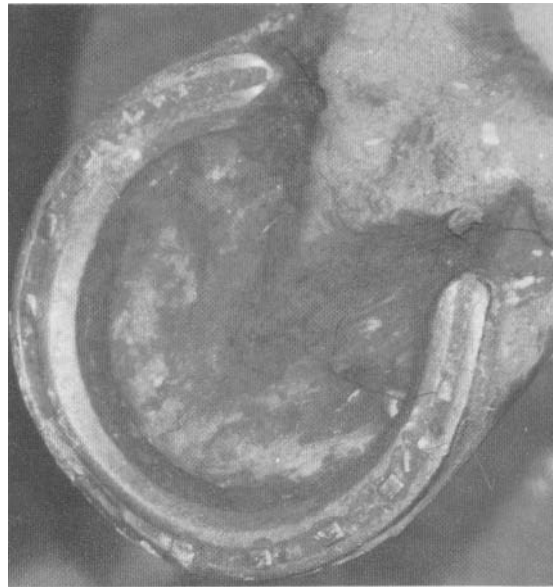


Figure 6.18 *Dropped sole after laminitis. The farrier has dug a trench to avoid sole pressure with the shoe*



Figure 6.19 *The same animal, viewed from the side. Note broken foot/pastern axis*

which is seated between the bars of the foot. It extends considerably below the level of the sole and comes into contact with the ground during normal movement. Above it within the foot is the digital cushion.

The Bars

At the heel the horny wall bends forwards and inwards to meet the front angle of the frog. The inturned wall forms an upright partition of horn and this, in company with the upright wall of the heel, constitutes the bar of the foot. The purpose of the bar is to take additional weight upon the heel. Horses, except during the slow walk, land on the heel first, then the frog, and finally the toe, as the body travels over the area occupied by the foot. Each time this happens the frog should take the weight, force the angle of the bars open, and prevent the heels from caving in and contracting. Each time the bars are forced apart they lift the fibroelastic digital cushion above them and exert pressure on the network of blood vessels contained within the horny casing of the foot.

The Effect of the Foot on Circulation

Considering all factors, we can see how the foot succeeds in maintaining an efficient circulation. Blood reaches it under the combined influence of gravity and the pumping of the heart; but the return is helped a great deal by the action of the frog being compressed by the ground. This causes the digital cushion to be thrust upwards between the cartilages exerting pressures sufficient to squeeze blood out of the complex of vessels in this area and back up the veins to the body. It

must be stressed that this can only be effected when the frog is naturally expanded and makes contact with the ground.

In a correctly shod foot the weight of the body falls upon the wall and frog, with little or no pressure being transferred onto the sole (the natural concavity of the sole saves it from direct contact with the shoe). If, for example, the frog has been trimmed well back and the heel of the shoe is thick, the pumping action may be reduced, and the buffering effect of the digital cushion is lost. The result is greater strain on higher structures of the leg, such as the fetlock, cannon and tendons. Congestion may result and there is a tendency to contraction of the foot. Limb circulation also suffers.

Breed Influence on Foot Shape

The shape of the feet varies with breed and type, the Thoroughbred tending to have smaller and more delicately designed feet, with sometimes light walls and upright boxy angulation with the ground. Low-heeled, elongated feet are also seen, though there is little doubt that the eventual shape of many a Thoroughbred foot is heavily influenced by ill-judged human interferences during its early life. Generally, working breeds have larger, flatter feet with stronger walls and greater durability.

Native pony breeds have tough foot construction, suited to animals which live outdoors throughout the year. Kept indoors, these animals may be prone to laminitis. They tend to have hard horn and the heels are high and upright.

The four feet of a hunter capable of carrying 75 kg (165 lb) cover a total area approximately 600 sq cm (92 sq in) of ground. Sometimes, in movement, only one foot is making contact with the ground, at others two or three. When a



Figure 6.20 *The weight-bearing limb takes the full force of the landing after a jump*

horse lands from a jump it has been estimated that the weight-bearing limb may be met with a force equivalent to many times the bodyweight (Figure 6.20). The

reality of this gives some indication of the burden imposed on the limb and the risk of injury at any point or time during exercise or competition.

7

The Back, Abdomen and Hind Limb

While the back is included as part of the examination at this point, detail of its anatomical structure is dealt with elsewhere (Chapters 3 and 10).

The Back

The examiner runs his hand over the area of the back and flank. Along the back, note is taken of any indication of pain or muscle spasm on manipulation and any deviation from normal in muscle development or in the outline of the underlying bone. Just finger pressure is adequate to detect abnormality and there is never a need for roughness when examining any horse. Manipulation, carried out by an expert practitioner, is as delicate as the playing of a piano, and just as artistic. Normality of movement is restored by the triggering of reflexes and the realignment of bony integrity by simple muscle contraction and short swift pressures applied to critical areas.

Any indication of bursal enlargements, saddle sores or bony abnormalities of the upper vertebral spines are taken into account. Very few horses would ever be produced for sale where there was clear aggravation that might prevent a saddle from being put in place, and, if it did happen, the examination would normally be suspended. Alternatively the horse would be rejected, although, if the condition was

considered temporary it could be lunged as long as there was an extended warranty given with regard to the condition.

The flank and ribs are examined by running a hand over the entire area and watching closely for evidence of scars, bony enlargements, girth galls and areas of infection which might have come from tack.

Anatomy of the Abdomen

The abdomen lies behind the costal arch, below the loins, and in front of the haunch, thigh and stifle. It is normally spoken of in terms of flank and belly. The abdominal wall is formed from several layers of muscle which are important because they support the weight of the abdominal contents, or viscera (stomach, small and large intestine, liver, spleen, etc.). The abdominal muscles have rib attachments; they also attach to the loins, the ilia (bones that form the haunch), and the pubic areas of the pelvic bones. Weight pressing down on the inside of the abdominal wall is distributed upwards, forwards and backwards by the abdominal muscles.

Identifiable surface features are relatively few; there is a hollow in the flank just in front of the haunch, and the lower part of the flank is united to the stifle by a very mobile fold of skin. This skin fold

contains part of the thin cutaneous muscle which finds attachment to the patella.

The lower silhouette of the belly should show a graceful curve up and back from the sternum to the groin on the inner side of the thigh. However, this curve varies with type, digestion and state of training. Horses on fibrous diets have more voluminous abdomens than those on concentrates.

The whole abdominal wall is elastic and yields to finger pressure. Because it is composed of soft structures attached to the ribs (and the diaphragm forms the front margin of the cavity), the abdomen mirrors the movements of the chest in respiration.

This area runs back to the inguinal region in which is contained the mammary glands in the mare and the external genitalia in the stallion and gelding.

The Inguinal Region

At this point, the area between the legs can best be inspected. The sheath of the stallion and gelding and the mammary area in the mare are of great significance for animals being bought for breeding purposes and would have to be given special consideration in those situations. Any swelling that might be caused by a hernia would also have major significance, and no such animal could be passed for sale. This could be marked by swelling in the umbilical or inguinal areas due to weakness in the abdominal wall with descent of viscera from the abdomen into the hernial sac.

The mere existence of an old scar from an inguinal hernia operation would not constitute a reason for rejecting an animal that had a history of soundness, perhaps even in competition; though it would have to be declared. A rectal examination might have to be carried out, and the region of

the wound examined thoroughly, to ensure there was no persisting weakness.

A midline trace of an umbilical hernia operation, carried out when an animal was a foal, would not be of major importance in an otherwise healthy adult with no indication of muscular weakness in the region.

The wall of the abdomen is also carefully inspected for scars that might indicate surgery at an earlier time, as the consequences of such surgery would have to be considered.

A flank or midline scar on a horse that may have had abdominal surgery for colic would be particularly important. While such an animal may be able to lead a relatively normal life, and may even compete with success, where there has been disturbance of functional gut anatomy a buyer would have to be given that information and allowed to make a decision to buy on the basis of what that implied. It is possible that a horse in that state might have to have special consideration as regards diet and management; without that, its life might be in danger. Hence there is no way in which a sale could be valid without this information, except where an animal is sold 'as is' – as described in the USA (although, even then, the case would hardly be cut and dried). Scars from abdominal surgery are generally quite evident and easily seen, though, at times, with first intention healing, it is only by handling the skin over the area that a positive opinion can be expressed.

Handling of the lower abdomen and inguinal area is resented by some horses; often simply a matter of first experience. Many improve when familiar with the procedure.

The Surface of the Dock

The region of the dock is examined next.

While most horses have no objection to this, it is always advisable to take care. A foreleg is lifted if there is any chance of being kicked, or, where possible, the animal is examined in stocks, or backed into a doorway.

The strength of the tail is gauged and note made of any kinks or breaks in it. It is also important to see if the hair is broken from rubbing or scratching. While such an occurrence may easily occur in a trailer on the way to a sale, it could indicate sweet itch or worm problems. With sweet itch, the mane would normally also show signs of rubbing and the crest would probably be thickened.

Damage to the tail might have no significance to the future use of a horse, but, if associated with injury to the spine or spinal nerves, could be serious. Particular attention will be given to this structure, later, when the horse is being exercised.

The perineum should be free from infectious conditions such as pock (or pox) – caused by a herpes virus – sarcoids and melanomas. The vulva in the mare should

be well formed (in a vertical plane), with a tight natural seal and there should be no indication of scars that might break this seal, or evidence of windsucking due to lack of tone in related soft tissues.

The anal sphincter is sometimes found defective due to congenital abnormalities, or from being damaged, particularly in mares, through injuries occurring in foaling. If there is a break in the natural seal of the anus, with air being inspired into the rectum, this would make the animal unsound. However, it is a problem with which some animals cope without any evident discomfort or loss of condition.

The Pelvic Girdle

The pelvic girdle (Figure 7.1) consists of two equal bony halves which are firmly united in adult life. These bones, together with the sacrum and the first three coccygeal vertebrae, form the boundaries of the pelvis surrounding the pelvic cavity. This

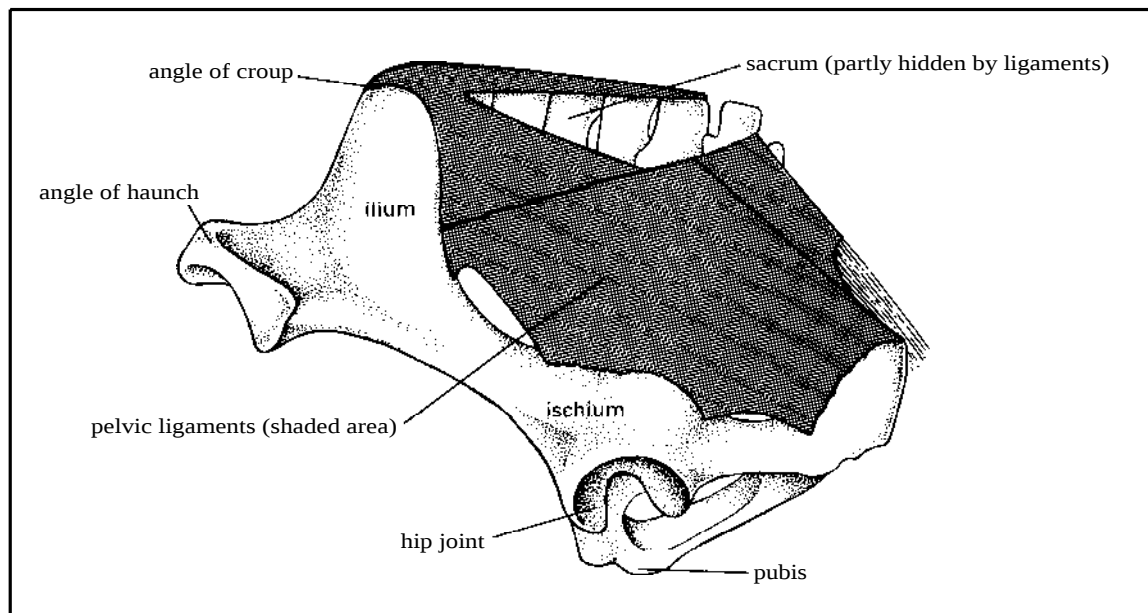


Figure 7.1 The pelvic girdle

cavity houses the rectum and bladder (when empty), the posterior part of the uterus, vagina and vulva in the mare, and some parts of the genital tract of the stallion. In the mare it also provides the passage through which the emerging foal must pass during the process of birth.

Each half of the girdle is made up of three flat bones – the ilium, the ischium and the pubis – fused together into one composite bone. The upper portion of the pelvic bone, that part which attaches to the sacrum, is the ilium; the front of the pelvic floor lying between the hind limbs consists of the pubis; the hindmost portion is formed by the ischium. These three bones all meet at one point and in so doing give rise to the large cavity – the acetabulum – which houses the head of the femur to form the hip joint.

The ilium is the largest of the pelvic bones. It is flattened above into a roughly triangular plate which forms part of the roof and outer wall of the pelvic cavity. Its outermost angle is enlarged to form the *tuber coxae* which gives shape to the haunch or pin, the most prominent bony part of the hindquarters on either side. The inner angle, the *tuber sacrale*, approximates its fellow of the other side where they join the sacrum. The ilia are firmly united to the sacrum by the short, strong sacroiliac ligament. At the highest point of the hindquarters both *tuber sacrale* together form the slight eminence known as the croup – the jumping bump.

The pubis and ischium combine to form the pelvic floor and meet their opposite numbers at the pelvic symphysis in the midline.

In the foal the bones are joined by a layer of fibrocartilage. In the adult this is largely replaced by bone and no appreciable movement occurs even in the mare. The ischium is thickened at the back as the *tuber ischii* or seat bone.

The pelvic bones provide extensive areas for muscle attachment, many of

which are especially important in locomotion.

Surface of the Pelvis

The position of the sacrum and its relationship to surrounding structures is best seen while standing back from the horse during the visual examination of the surface, but now a more intimate inspection of the area is made by hand. Any difference in the angle of the croup on either side is noted and the muscles attached to the region are handled for evidence of deep injuries or atrophy (shrinking). Such injuries are detected on the surface as breaks in the natural contour of the muscles, where there has been separation within muscle groups, leaving indentations and hollows. Indurated (hardened) areas are also felt by pressing the fingers onto the muscle and feeling its texture. Signs of old injuries are evidenced by hard swellings and gritty deposits in the muscle substance. Where there is doubt, compare the feeling to that of the other side of the pelvis. It is not as difficult as it may seem and damaged regions are relatively easy to detect with a good idea of the visual anatomy and the normal feel of healthy muscle.

Anatomy of the Hind Limb

The hind limb differs from the forelimb in the fact that it is directly attached, through bony union, with the spine. This means that forces generated by the hind limbs will be transmitted directly onto the spinal column.

From above to below the bones of the hind limb (Figure 7.2) are:

1. The *os coxae* or pelvic bone.
2. The femur, which reaches from the hip

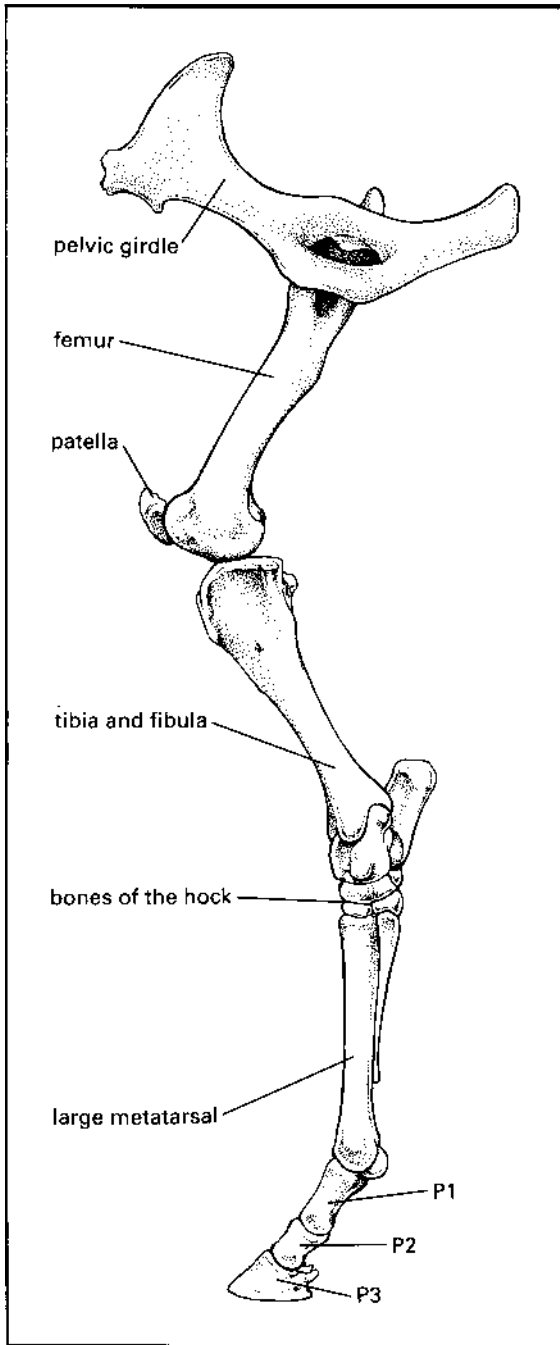


Figure 7.2 *Bones of the hind limb*

joint to the stifle (the large sesamoid bone, the patella, lies at the front of the lower end of the femur).

3. The tibia and fibula, extending from the

stifle to the hock joint (the fibula is greatly reduced in extent).

4. The tarsus or hock, made up of six bones.
5. The metatarsal bones and phalanges, which differ in no significant respects from the metacarpals and phalanges of the forelimb.

The Hip Joint

The hip joint (Figure 7.3) is made up from the head of the femur and the acetabulum of the pelvis.

The prominence on the outer side of the thigh usually referred to as the hip is, in reality, part of the femur. The true hip

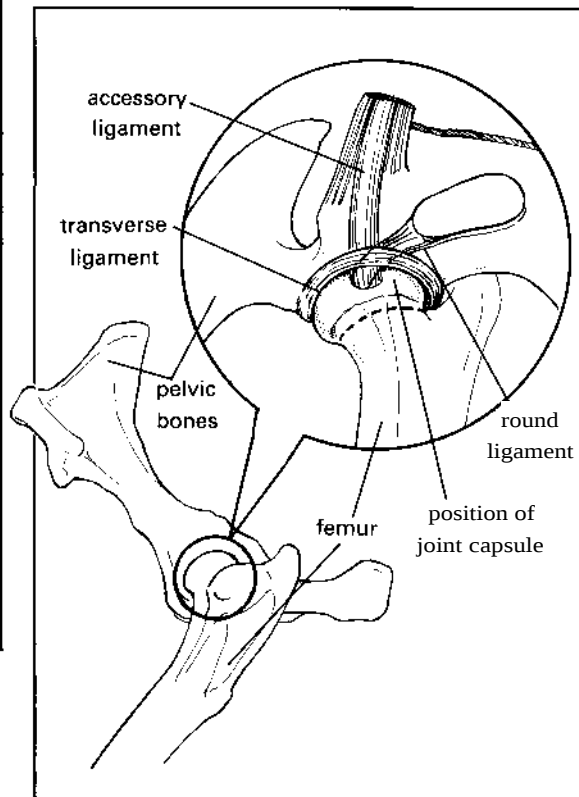


Figure 7.3 *The hip joint*

joint lies somewhat deeper and cannot be felt from the exterior.

The joint, in principle, permits movement in every direction although an accessory ligament limits ability to abduct – move the limb away from the body. This is said to make it difficult for a horse to cow-kick in the forward and outward direction, but do not depend on it, it is possible to be hurt while standing at the shoulder of a horse that has the ability to kick forward.

In a horse standing squarely on all four feet the angle in front of the hip joint is 110-115 degrees, the inclination of the femur to the vertical is 80 degrees and that of the ilium 30-35 degrees with the horizontal.

When the hip is flexed the femur travels forward but in actual practice its range of movement is limited by the fact that the thigh is closely attached to the body by muscle. The horse, in fact, is inhibited here and, even in a fast gallop, its hind feet seldom advance forward beyond a line dropped from the umbilicus.

The Femur

The femur (Figure 7.4) is a long bone, one of the heaviest and strongest in the body. Yet, like the humerus, the femur can be shattered in the middle of a flat race by muscular incoordination. The femur acts as the medium between two very important joints, hip and stifle, and is specially adapted for providing attachment for the large muscles which operate the upper part of the limb.

In front, the lower end of the bone carries a pulley-like groove on which the patella – similar to the human knee-cap – glides up and down. Below and behind is the true stifle joint articulating with the head of the tibia and with the intra-articular cartilages.

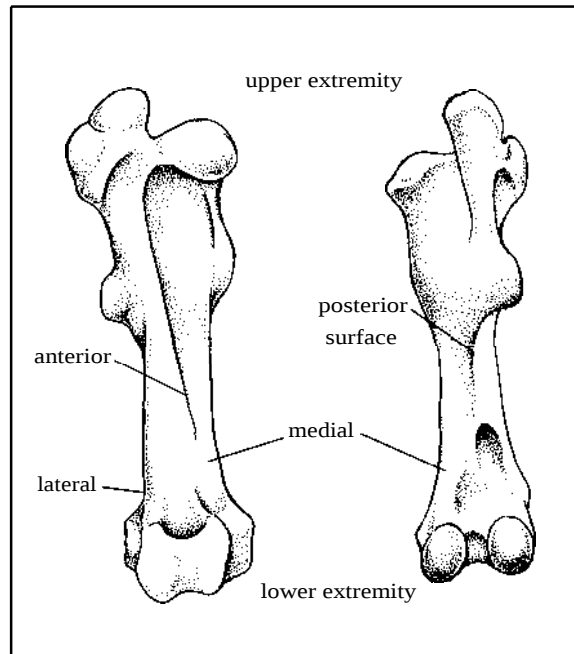


Figure 7.4 The right femur

The Stifle Joint

Just as the carpus is analogous with the human wrist, so the hock corresponds with the human ankle and the stifle with the human knee. The stifle contains two separate joints, one between the tibia and femur; the other between the patella and femur (Figure 7.5).

The ligaments of the femorotibial hinge joint are in the form of normal medial and lateral ligaments. In addition, two strong fibrous cords, the cruciate ligaments, cross each other like the letter X, and attach the tibia and femur within the joint itself. The cruciate ligaments and the collateral ligaments function to prevent overextension.

The menisci – discs of cartilage – function to correct the anatomical disparity between femur and tibia, and act also as shock absorbers. They are similar to the cartilages of the human knee.

The patella is a sesamoid bone and serves essentially the same functions as

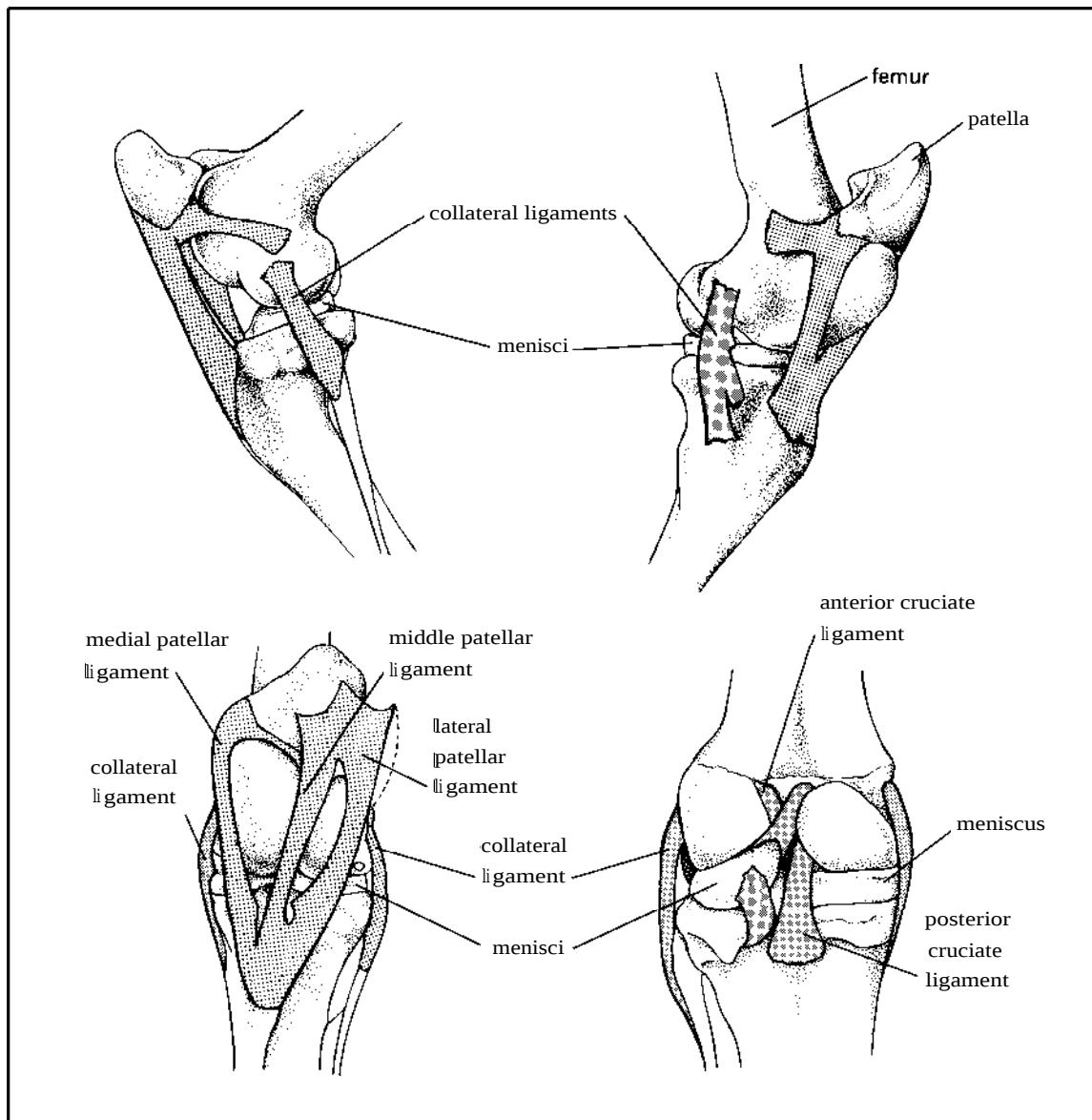


Figure 7.5 The left stifle joint

the proximal sesamoids of the fetlock. It three long ligaments which are easily felt provides a mechanical advantage for through the skin at the front of the stifle muscle of the thigh by removing its line of just below the patella.

action further from the centre of rotation of the joint. The patella, although not weight bearing, also provides a corn-
pression and tension resistant element for

Movement of the Stifle Joint

muscle tendon. It transmits the muscular pull exerted upon it to the tibia through The stifle is another hinge joint with prin-

cipal movements of flexion and extension. In the normal standing position the angle behind the stifle varies from 135 to 140 degrees. Flexion of the joint is limited only by contact of the gaskin with the thigh. Extension, however, is incomplete as the thigh and leg bones never come into the same straight line, further movement being checked by the tension of ligaments.

During stifle flexion and extension there may be times when the patella is in danger of slipping out of its groove, but the risk of dislocation is reduced by the ligaments. More commonly it is pulled in an upward direction where it can hook itself over a ridge on the inner side of the bone while the horse is at rest. This locking mechanism, which is of great importance in the resting position, occurs when the joint is subjected to a degree of extension not occurring during normal locomotion.

In the resting position, flexion of the stifle is prevented as long as the hip is flexed. In this state, stifle flexion jams the patella and fixes the joint in position. If the hip extends, followed by stifle extension, unlocking should occur.

Abnormal fixation often occurs in horses with straight hind limbs in which inadvertent overextension and subsequent locking are likely to occur in motion, or, more commonly, as the horse prepares to move off. This results in the limb being locked in full extension with the result that, stretched to its utmost, it is carried behind the body. Reposition is usually effected by applying forward traction helped by inducing the horse to make a sudden jump forward on the sound limb. This condition is frequently encountered in young horses, and may improve with fitness (though the reverse can also happen). It may be hereditary and has been associated with certain stallions. In many cases the tendency lessens or disappears when the bones attain full length and growth ceases.

Young racing Thoroughbreds suffering

from the condition are commonly treated surgically, although not always with success. Surgical scars, indicating an animal has been operated on, are found on the inner side of the stifle.

The Tibia and Fibula

The tibia is a long bone extending obliquely down and back between the stifle and hock joints. The upper end of the tibial shaft provides attachment areas for muscles acting on the hock and digits.

The lower end of the tibia articulates with the tibial tarsal bone of the hock. The ridges and grooves in both bones are set obliquely forwards and outwards. It is extremely important that this particular angle of obliquity be exactly correct; the whole movement of the lower portion of the limb being linked with it.

The fibula (Figure 7.6) is a much reduced long bone articulating with the

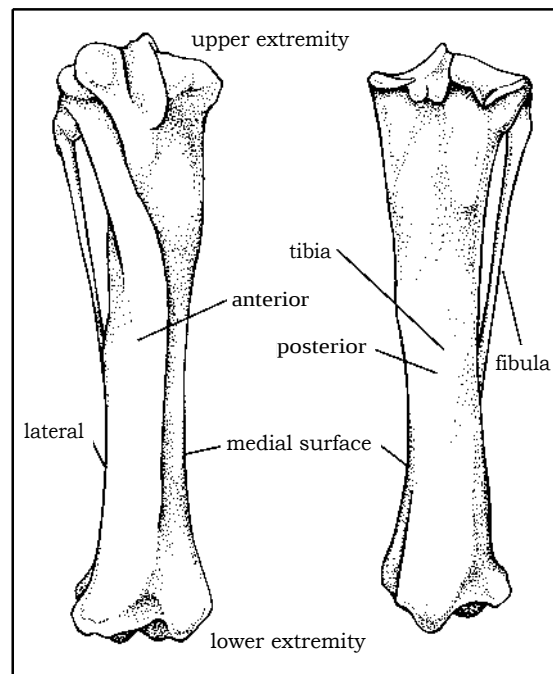


Figure 7.6 The right tibia and fibula

outer surface of the tibia. It is thin, not unlike a splint bone, and tapers away to a point at the lower third of the tibial shaft. Between the bodies of the tibia and fibula is an elongated space.

The Tarsus or Hock

In the same way as the knee, the hock is made up of several joints (Figure 7.7); however, it articulates directly with the lower end of the tibia through only a single bone, the tibial tarsal. The six bones comprising the hock are bound together

tightly by ligaments. All are short, flat bones and arranged roughly in three rows. In the upper row are the talus (or tibial tarsal) and calcaneus (or fibular tarsal); in the middle row, the central tarsal alone; in the lower row, the first and second tarsals fused together and the third tarsal. The fourth tarsal, a six-sided bone shaped like a brick, occupies a part of both middle and lower rows, being as deep as the central and third tarsal. It stands alone, directly beneath the calcaneus.

The calcaneus is the largest bone in the hock and is made up of a body with a large upstanding process, the *tuber calcis* (the point of the hock, equivalent to the human

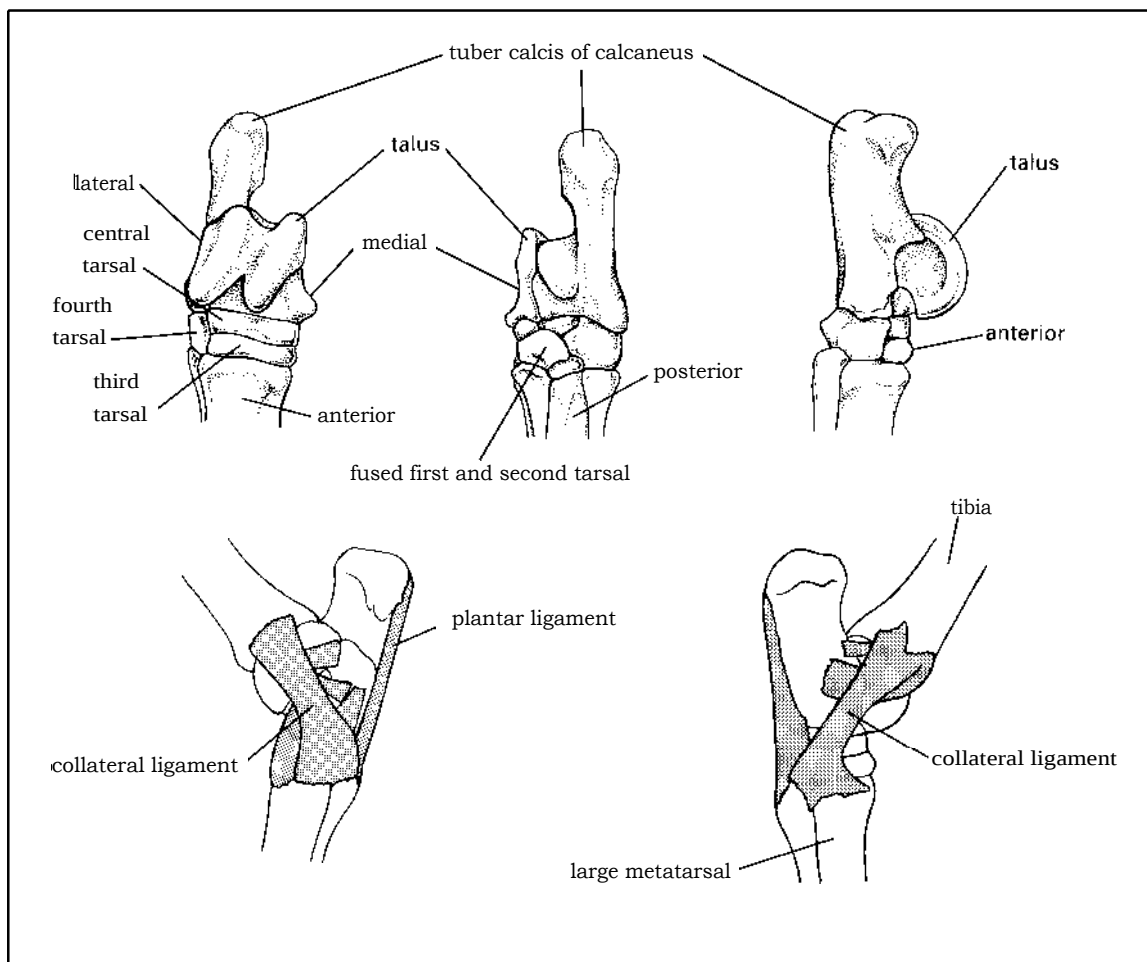


Figure 7.7. The tarsus (or hock)

heel). The *tuber calcis* forms a lever arm for the attachment of the extensor muscles of the hock. The tendon of the superficial flexor caps the point of the hock here and attaches to its hind surface.

The central tarsal is a flattened bone, slightly concave on top for articulation with the talus. It occupies the whole of the central row, apart from the fourth tarsal.

The third tarsal, the flat bone of the lowest row, much resembles the central tarsal but is smaller and more triangular in shape. The smallest of all, the fused first and second tarsals, situated on the inner side of the hock, are roughly triangular, with a base at the rear, and an apex pointing downwards and forwards.

Movement of the Hock Joint

For all practical purposes the hock is a hinge joint moving in one direction only, since nearly the whole movement takes place between the tibia and talus. Lateral movement is prevented by the structure of the joint surfaces, although the overall movement is in an oblique direction.

The joint capsule is thin in front but extremely thick behind where it forms the plantar ligament. This ligament, which is cartilaginous in part, forms a smooth surface for the deep flexor tendon. The capsule also gives rise to the sub-tarsal check ligament which unites lower down with the deep flexor tendon.

In the normal standing position the angle in front of the hock is approximately 150 degrees. Like the elbow and stifle this is the middle position of the joint and the articular surfaces are in maximum contact. Complete extension is prevented by the collateral ligaments; flexion, on the other hand, can bring the cannon close to the gaskin.

The hock joint is one of the hardest working structures in the body, and much

of the animal's activity is centred around its ability to flex and extend rapidly and rhythmically with perfect timing. The stifle and hock are synchronised in their movements by virtue of the ligaments and muscles which control them. Therefore, when the stifle flexes, the hock flexes; when the hock extends, the stifle extends; one not functioning independently of the other on account of the tendinous bands in front of, and behind, the limb.

It follows that a horse with a straight stifle carries a straight hock, and vice versa. Thus an animal standing squarely possesses hocks as flexed as its stifles. A line dropped from the *tuber ischii* to the ground should lie straight along the posterior edge of the hind limb from hock to fetlock.

The bones of the hock, other than the talus, act mainly against concussion. There is very little movement between these, either as rows or individually. The lower end of the tibia fits accurately into its groove, so that in pulley fashion the joint can work smoothly and handle great weights with a minimum degree of muscular effort. Additional leverage provided by the *tuber calcis* greatly adds to the efficacy of the joint, giving much greater power to the muscles, the tendons of which are attached to its summit.

Surface Examination

The hind limb is examined closely from the external angle of the ilium – the angle of the haunch – downwards, beginning by ensuring that there is no gross change to this angle or its muscular attachments. It was not uncommon in the past for horses to injure the haunch in narrow doors, and to even break the outer angle of the bone or injure the muscular and ligamentous attachments to it. This invariably led to a knocked down appearance and was often a cause of chronic lameness. Inevitably,

such a condition would amount to unsoundness, even if there were no overt lameness. Any horse thus afflicted would be unlikely to remain sound if subjected to racing. In some cases, surgical removal of the broken bone piece can return the animal to full working soundness, and if this is done, the case will be judged on merit, depending on the influence on muscles and other surrounding structures.

The rest of the musculature in this region should have a natural contour to it, matching with that of the other limb. There should be no distortion between stifle and haunch, as might result from muscle rupture and there should be a natural tension to the muscles that connect these two structures. The muscles at the back of the limb should also be smooth, have a healthy full contour and show no evidence of abnormal contraction that might result from old injuries and limit movement in the region.

The stifle joint should be balanced and free moving with no scarring that might indicate surgery to the ligaments of the patella. There should be no inclination of the patella to lock when the horse moves off and no synovial swelling detectable in the region of the joint.

Between the stifle and hock – in the gaskin – the muscles should be strong, well developed and free of any evidence of previous injury. I recently attended a horse that had suffered a star fracture (probably the result of a kick, but with the shaft of the bone still intact) to the tibia some time before. The muscles in the area were swollen and sore and, although the horse trotted sound in a straight line, there was interference with normal tracking of the limb and the problem led to secondary injuries higher up. However, the condition was treatable and the horse returned to full working soundness.

The hock joint, in order to withstand the workload, needs to have good conformation (Figure 7.8) and be free from evident source of weakness. However, as with other parts of the anatomy, conformation does not necessarily influence the decision of a vet examining for soundness. The possession of cow hocks or limbs that are camped under or behind is all relative. In the case of examination at a sales yard, the animal will be bought as seen. Unless there is overt lameness or the conformation is so poor as to hinder the future use of the animal it will not be rejected on the grounds of conformation.

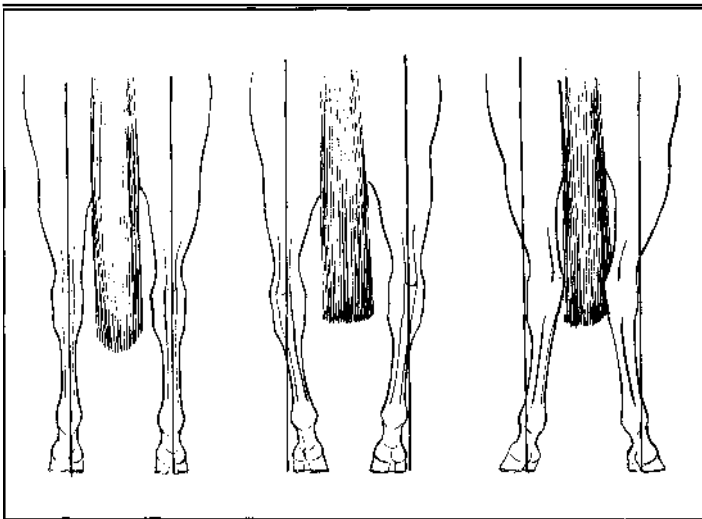


Figure 7.8 Hock conformation, horse standing squarely: normal (left); base narrow (centre); and base wide (right)

A vet will inspect the hock joint with extreme caution, even when perfect and unblemished. His brief is to detect any cause of lameness or likely cause of limitation of future use. The presence of soft swellings on the front and side of the joint will influence his decision and any other soft tissue swellings of the sheaths and bursae surrounding it.

If the hock is poorly designed and there is a sign of bog spavin, this could well result in rejection. A thoroughpin (Figure 7.9) on a good hock, on the other hand, will be brought to the notice of the buyer, but the influence on purchase could be small, taking the particular details of the situation into account. If movement is strong and uninhibited, it may well be disregarded.

A curb on a good hock, once cold and settled, is nothing more than a blemish, though its presence would reduce the value of a showing animal. A curb on a badly overbent hock, in the other hand, could be the cause of rejection, although the final decision might rest with the buyer.



Figure 7.9 Thoroughpin

A false curb occurs when the head of the outer splint bone is large and encroaches on the point of curb. It is quite a common anatomical detail and has no significance except to make the hock appear coarse.

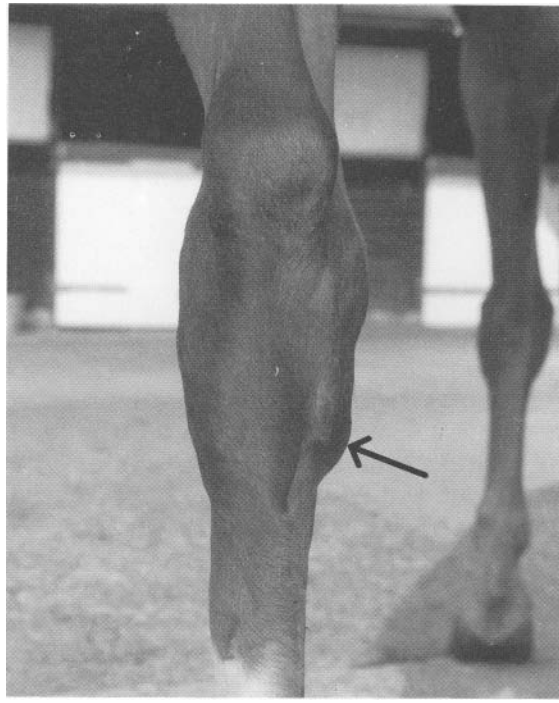
A capped hock (Figure 7.10) would not generally cause a horse to be rejected, except where the condition was recent, hot and painful, the horse resenting its being handled, and perhaps signs of lameness present. If small, cold and settled, its presence would be thought to be no more than a blemish, but would be recorded on the certificate.

The attachments of the Achilles tendon to the point of the hock must all be normal and there should be no sign of past surgery or injury that has not settled down. Where there is long-standing enlargement here, the decision on its significance will depend on how the horse moves, if it is tracking level, and if there is any local pain or heat detectable at the time. While absence of heat might signify that the injury is not currently active, the vet's decision will depend on the future prospects for soundness when subjected to rigorous exercise. All signs will have to be very favourable if the animal is to be passed. Any such lesion could mean an alteration to the normal angulation of the limb. This would have to affect tracking and as such would limit the horse's chances of staying sound for anything other than a sedentary existence.

The bones of the hock can be felt if the skin is not too thick, or the hock too coarse. This exercise is of value in the diagnosis of spavin. True spavin is a bone inflammation which commences on the inner side of the hock (Figure 7.11) near the head of the metatarsal bone and extends into the fused first and second tarsals, and sometimes the central tarsal. It is marked by ulceration of the articular surfaces with deposition of new bony deposits on the external edges, a form of healing process. However, this interferes



Figure 7.10 *Capped hock*



ii Bone spavin seen from the rear

with the complete flexion of the joint and causes lameness. The lameness is most pronounced when the horse first comes out of its stable but diminishes with exercise; the lameness is then most noticeable when the horse is moving off. The condition is said to be hereditary, but whether it is the pathological condition that is transmitted, the conformation, or the quality of bone is uncertain.

The veterinary decision on bone spavin will generally be against the animal, irrespective of its current form, and the decision on purchase will rest with the buyer. As in the case of an international event horse I examined some time ago, a buyer may decide to take a gamble if the qualities of the horse are sufficient to warrant it. This particular horse had an evident spavin and trotted off unsound. Although I was unable to pass him, he

was bought – at a very reduced price – and, even though the hock had to be operated on, continued in competition. Later, I was informed, he developed spavin on the other hock and this too required surgery. However, the buyer was more than pleased with the success he brought.

From the hock to the ground, the problems encountered are as mentioned earlier concerning the foreleg (see Chapter 6), except the incidence of tendonitis and concussive type lameness is considerably less in the hind limb.

The hind foot is narrower and more upright than the fore. In both fore and hind feet, the outer surface of the sole and wall is a little more convex than the inner which is flatter. The sole of the hind foot is also a little more concave than that of the forefoot.

8

Examination at the Walk and Trot

As soon as the horse has been examined at rest, it is walked (Figure 8.1) and trotted in hand and observed by the vet while being led away and coming back again, over a distance of about 20-30 m (22-33 yd).

anatomical uniformity at all stages of each stride.

Lameness at the Walk

Viewing the Walk from Behind

From this aspect, the vet will note the level of movement, the length of stride and the

If a horse is lame behind, the hip will drop when the sound limb strikes the ground (the opposite for the lame limb) (Figure 8.2), depending on the degree of lameness and if it is sufficient to be noticed at this

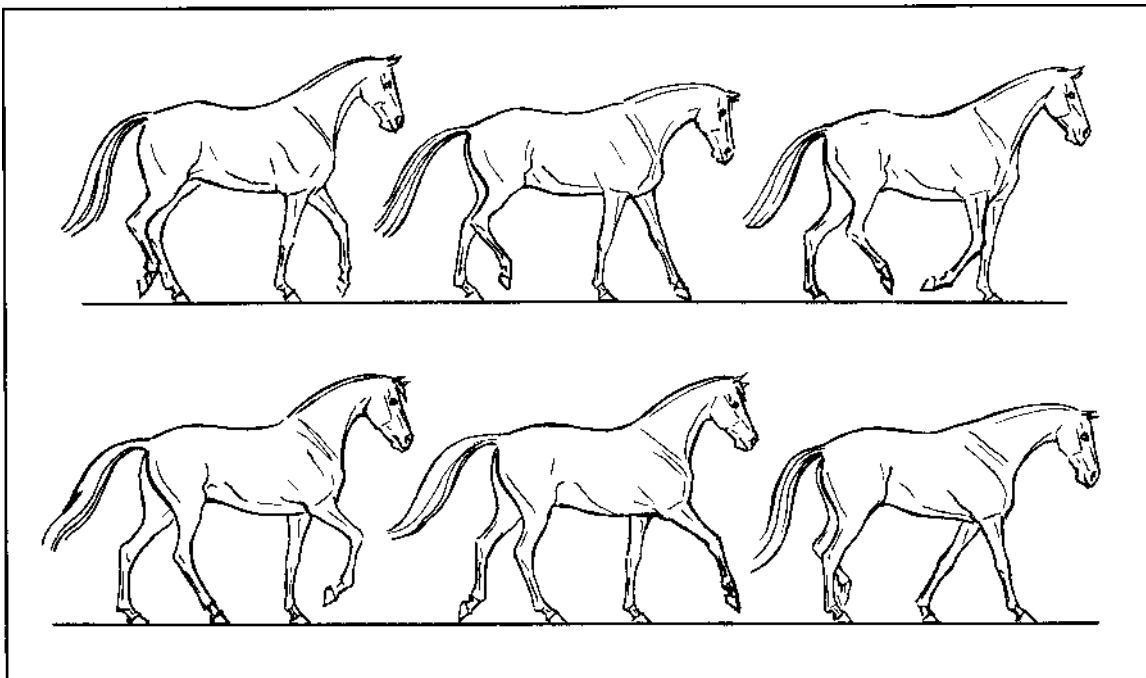


Figure 8.1 *Horse at walk*

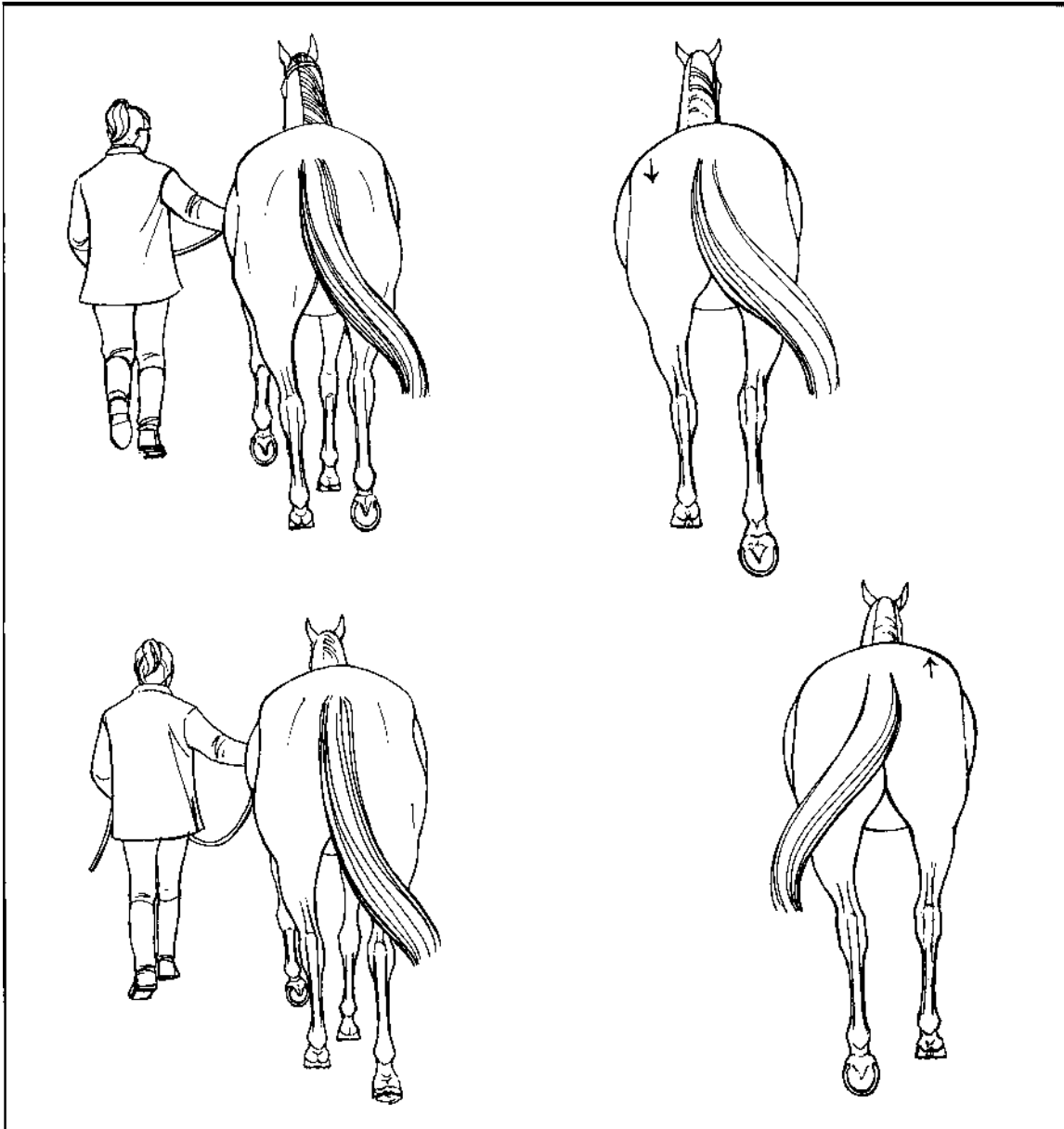


Figure 8.2 The horse is led away (top, left) at the walk, level on both hind limbs and bearing weight on each foot equally (above, left); the hip drops (arrowed, top right) as the horse's sound limb strikes the ground; the hip on the lame limb rises (arrowed, above right) when weight is borne upon it. The reason for this is to limit the weight borne by an injured part

gait. The head, though it is not always easy to gauge its movement from behind, will rise as the hip drops, and vice versa.

If lameness is already evident or suspected at this stage, the horse may be

given a short trot to confirm it and the examination will then be over – perhaps only until such time as a minor problem, like a foot infection, has been cleared up. Then, possibly, depending upon agree-

ment between purchaser and vendor, the examination can continue, but this all depends on circumstances, and the vet's recommendation. However, there is seldom any purpose in continuing with a lame animal, except, perhaps, in cases similar to the one mentioned in the previous chapter where there was bone spavin formation.

Lameness at this stage is very often met with surprise by the vendor who may well have been unaware of it until the animal was trotted for examination. It is a situation where disputes can arise.

Pelvic Injuries

From behind it is critical to observe the level of the pelvic area with each step. It may already have been noted that there was muscle difference on either side of the upper surface of the pelvis when the animal was standing at rest. Now, however, this unevenness has to be observed as the horse moves. With jumping horses in particular, the sacrum and its attachments may have been disturbed at some earlier time in the animal's life. There could have been disturbance to the sacroiliac joint, or, alternatively, damage to the muscles in the area, or both. While the animal may now show itself to be unlevel as it moves, there still does not have to be overt lameness. The original cause of the problem may have abated and the pain long since been relieved. In the case of healed pelvic fractures, there may still be gross distortion of the regional anatomy, but the horse could be functionally sound.

However, most of these types of condition would have to render a horse unsound for sale purposes; though it is not beyond the compass of the vet to bring the matter to the notice of the buyer and allow a sale, without a sound certificate, if the animal has proven itself capable of functioning effectively despite it. This

often happens and, as long as the horse is competing successfully, a buyer might decide to have it, gambling that it will continue to stay sound in future.

Repaired pelvic fractures provide a generally good prognosis, although they would have to be mentioned and, in all probability, will influence the price. The horse would normally be examined per rectum to further inspect the fracture site. I recently saw such a horse at a public sale and there was a marked difference in the two sides of the pelvis. While the horse was functionally sound, and went on to compete with success, the condition, when brought to the notice of a buyer, was enough to prevent a sale.

On the other hand, any gross abnormality to the sacrum and related muscles is unacceptable and there is no guaranteeing such a horse will stand up to full work if required, say, for eventing or National Hunt racing. For leisure riding the prognosis might be different, but these conditions often cause a restriction on natural movement that will result in lameness under strenuous use in the long term.

It has to be realised, especially in jumping horses, that structural abnormalities affect action and lead to stress of intimate or remote regions. For this reason, a vet is not entitled to pass any animal suffering from such a problem as sound for anything other than a sedentary existence where there will be no chance of further injury. All horses with pelvic abnormalities are unsound at the time of examination. Many of these conditions are curable but it should be the responsibility of the vendor to achieve this.

The Action from Behind

The feet from behind should be raised an equal distance at each stride, with no spasmodic movement as they are lifting –

indicating stringhalt – and a similar amount of each foot should be exposed as the leg is flexed and protracted forward. The flight arc of each limb should be the same, though this is more easily gauged from the side view, and the manner in which the foot is placed should be the same, without any dragging of the toe, the foot falling almost flat when the horse is at the walk.

Note is made of striking or interference and any abnormality of movement that might result from spinal origin lameness or muscle injury. Neither might cause overt lameness, with dropping at the hip, though they often interfere with flexion and protraction, changing the arc of the limb in flight.

It is important that the hocks rise to the same height, and that their action be free and unrestricted. If there were bilateral bone spavin, they might rise to the same height, but both hocks would not be flexed to their natural maximum.

The rotation of the hip and quarter

(which occurs mainly from the lumbosacral joint at the walk) should be balanced from each side and the degree, while varying between horses, should be equal and free, with no evident restriction that might indicate pain. Particular note is taken of tail carriage and balance. There should be no deviation to either side, nor should it be held too high – as might happen if it had been nicked (a surgical procedure involving the muscles of the tail which is no longer legal).

As far as possible, the movement of the forelimbs from behind are observed, taking note of the undersurface of each foot as it is shown in movement.

Turning

It is vital to observe the horse as it turns (Figure 8.3), especially the placement of the feet and whether there is any indication of pain, perhaps expressed by quick

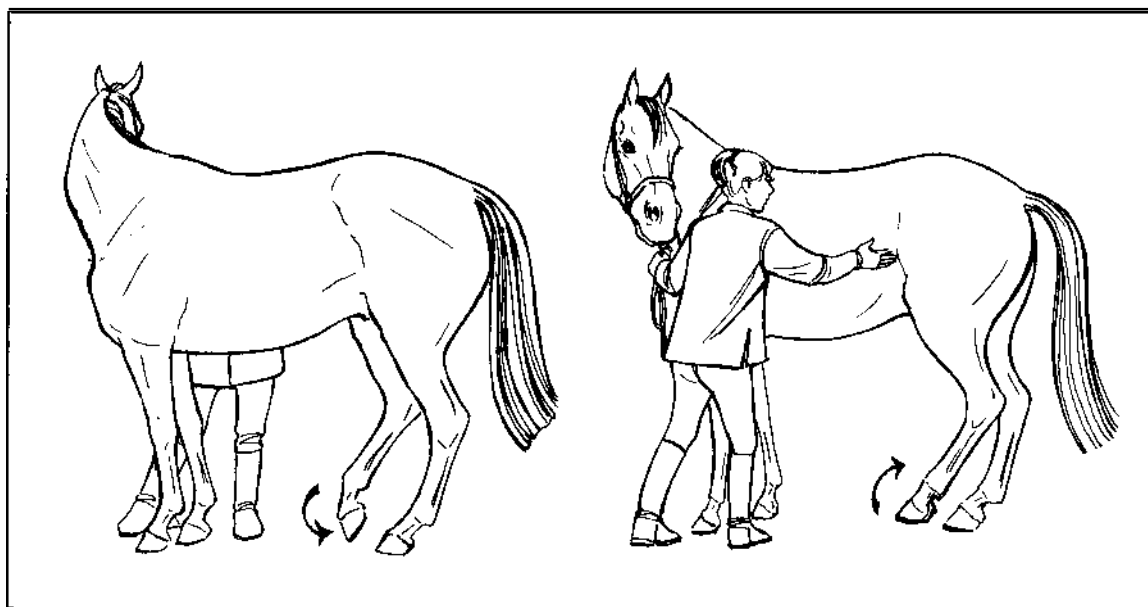


Figure 8.3 When turned in hand on a tight circle, the hind limbs must cross over without hindrance on both sides

picking-up of a leg, or shuffling, on the turn. It is not uncommon for the feet to strike off each other at this point.

Pain in Movement

While a horse's head rises when its lame forelimb meets the ground (and drops when its lame hind limb meets the ground) evidence of pain is more broad based than that. An animal may exhibit pain simply by showing discomfort. It may be seen as a hesitation in movement or even as a facial expression. While these are signs that are only interpreted with experience many people can see them with ease and respect them. There is no need to subject a horse already in pain to greater suffering, even by making it trot. While it is sometimes acceptable, for only a minimal distance, to confirm lameness, remember that horses feel pain just as we do. There is no need to add to it in coming to a decision.

People who twist joints to see if they can elicit pain, or locate the source of lameness, are simply insensitive. Worse might be said of those who deliberately lame horses in the name of science. There is no justification for it. If we are a truly civilised society, we should be able to find ways of divining knowledge without the need for inflicting suffering.

Viewing the Walk from the Front

A sound horse will walk freely and extend each foreleg fully from the shoulder. There will be no short, or false, steps and no knuckling when weight is borne.

As the horse walks back towards the examiner (Figure 8.4), balance of movement in the head, neck and forelimbs is

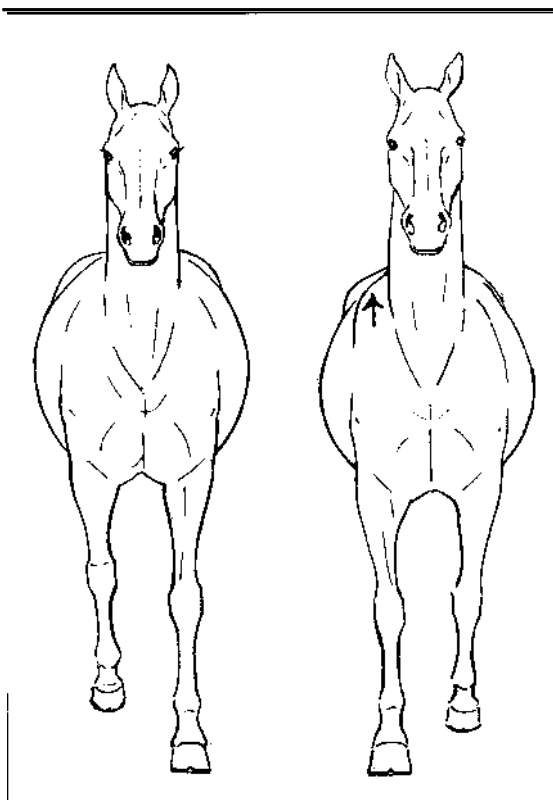


Figure 8.4 The horse walks towards the examiner. Stride length (left) is equal on both sides and the foot is placed flat, or heel, first. The head (right) is raised when the lame forelimb meets the ground. The limb is held rigidly and tends to prop on bearing weight. The head drops when the sound limb bears weight

looked for in a similar way to that in which it has been observed from behind.

The Action from the Front

The carriage of the head should be straight and not inclined in one direction or the other. The person leading the horse must allow an adequate length of rein so that it may enjoy freedom of movement (Figure 8.5).

Neck pain may be evidenced by muscle spasm and the reluctance of a horse to assume a natural position with its head.

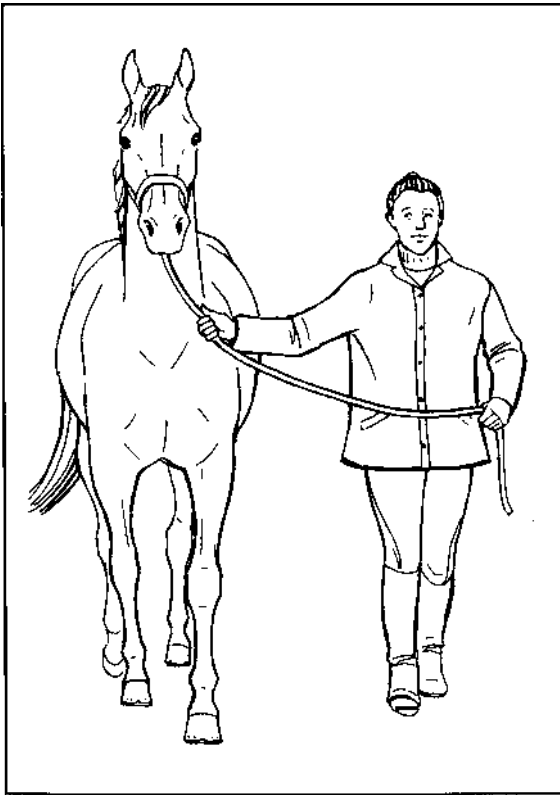


Figure 8.5 Walking towards the examiner the groom must allow adequate freedom for the horse to show itself fully

Particular note is taken of any restriction of movement that might result from pain or injury to bone or muscle. The manner in which the forelimb is protracted is important, gauging the comparison between the legs. If there is abnormal deviation from a straight line, this should be anatomical and occur equally on both limbs. Where it is confined to one limb, it may be caused by muscular problems in the shoulder area, or, possibly, interference with spinal nerves. In spinal-derived lameness, a false movement may be noted, as if the horse was forcing the limb forward against a restriction, the resulting flight path being away from a straight line - as being described by the normal limb - and the foot being placed on the ground

away from where it should be (either lateral to, or short of, the correct spot). There may be no evident change of head carriage and no propping of either limb as it meets the ground.

The degree of bend in the knee is noted, as is the full arc of flexion and extension during the flight of the limb (Figure 8.6). Also the placement of the foot on the ground, judging the stride length as the animal approaches and the angle at which the foot meets the ground. There should be no exaggerated movement of the toe up or down and the foot should strike almost level from front to back at this gait.

At faster gaits, the heel generally strikes first, although a hammer-like action of the feet at the gallop suggests the toe strikes in advance of the heel at times. After a jump, however, or in braking, the heel strikes first and the weight of the body then rotates over the foot.

At this stage also gait defects may be noted (Figure 8.7), an uneven sound as the feet fall may suggest lameness or loose shoes, or the sound of a dragged foot may be heard.

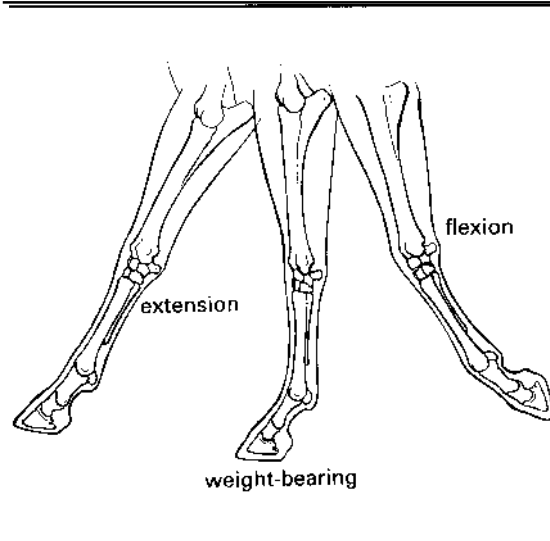
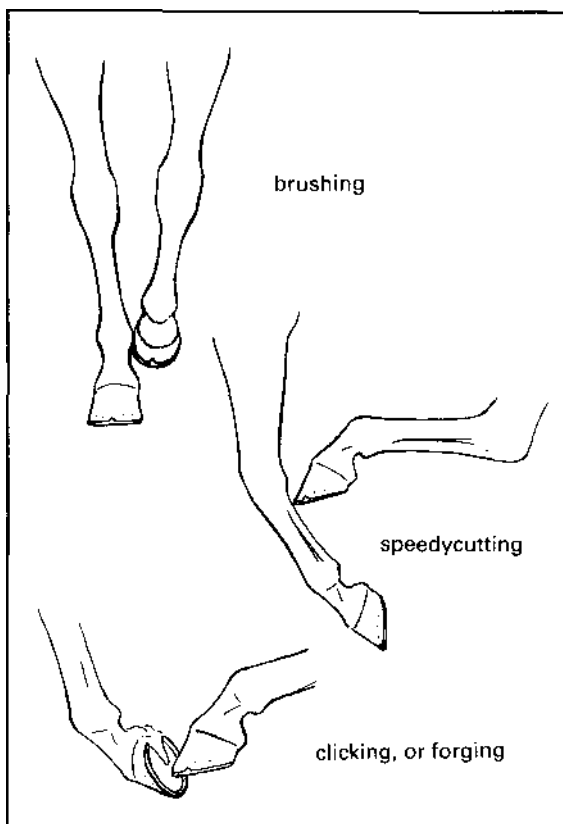


Figure 8.6 Limb in various phases of stride

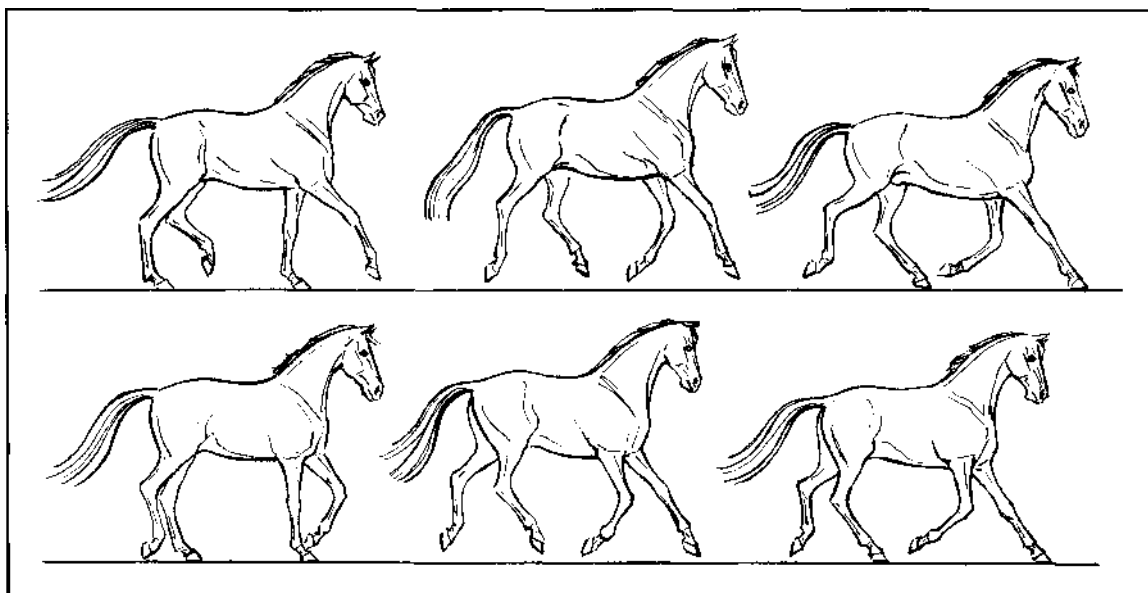
Figure 8.7 *Gait defects*

Viewing the Trot from Behind

The horse is now trotted away (Figure 8.8) for a distance adequate to give a good view of its action, about 30 m (33 yd). At this stage, particularly, evidence of lameness is detected.

Lameness at the Trot

The action of the head, forelimb and hind limb are watched with careful attention. Lameness, here, may be arbitrarily divided into two distinct types. The first occurs when the lame limb strikes the ground and this produces typical reactions as already described. This is called supporting-leg lameness, because the animal feels the pain at the moment weight is borne and this almost always indicates pain in the bony structures of the limb, or the soft tissue structures, such as ligaments and tendons, attached to them.

Figure 8.8 *Horse at trot*

Swinging-leg lameness, on the other hand, occurs when an animal feels pain while the limb is in motion. This is generally caused by primary muscular or ligamentous injury or abnormalities associated with the spine and its related attachments. The lameness in this instance is more likely to result in an altered gait without the pronounced physical symptoms already mentioned. However, let there be no doubt, the animal is lame and feeling pain.

starts to move over the foot, which is briefly fixed to the ground. When a toe has worn down, it may signify that the foot is not being placed properly. Such action is most often the result of muscular injury but can occur as a result of spavin or any injury that influences stride length. It is also possible that it may result from a naturally lazy action.

The roll of the pelvis to either side is particularly marked at the trot, although this is prevented at faster gaits by muscular action fixing the spine, thus eliminating lateral movement.

Action from Behind

While the horse is trotting away, note is made of the level of action at the roof of the pelvis, and the height to which the hocks are raised (Figure 8.9), and the flexion as the limb is protracted and the sole of the foot shown to view.

As the trot quickens and the limb is extended, the foot is placed with the toe slightly raised. The heel strikes the ground first here, before the weight of the body

Viewing the Trot from the Front

From the front (Figure 8.10), the head carriage should be level and balanced, the stride length even, with uninhibited forward extension of the limb. Note is again made of foot placement, particularly whether the foot strikes medially or laterally first – this type of action is not in the best interests of concussion absorption.

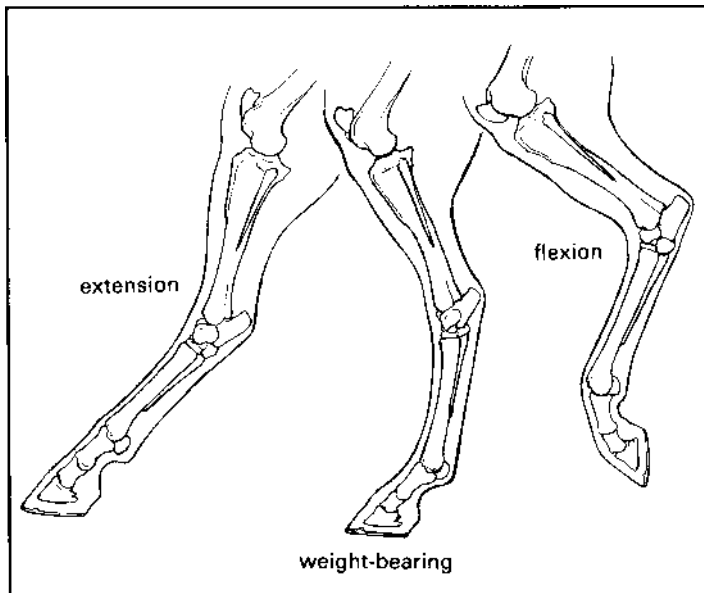


Figure 8.9 *Hind limb phases*

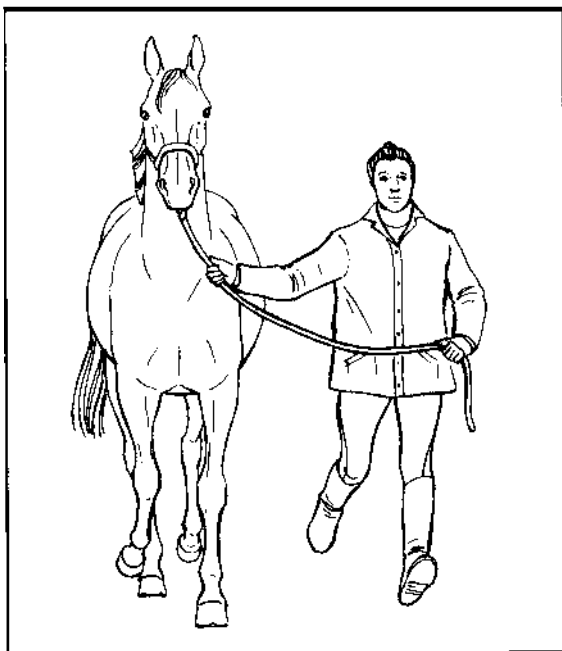


Figure 8.10 Horse being trotted towards the examiner

Very often, splints result from improper foot and leg balance, and, where abnormal action is noted, subsequent examination may well expose the presence of splints. Knuckling or stumbling can occur as a foot lands on the ground, caused by arthritic conditions involving any joint, but particularly the fetlock and knee.

To expose weakness, it is often best to trot a horse on a surface that is hard, uneven, or downhill. Splints are often accentuated on a down gradient, as are sore shins. However, it is unfair to test a horse on a rough surface where loose stones may come in contact with the sole and cause lameness to arise where it does not already exist.

I recall a very successful racemare I had previously passed sound – on a pre-sale examination – being spun for bilateral stringhalt at a sale, where the impression was created simply because of a pebbled surface. The mare, though rejected, won a race the following week and raced for

many years after, with no suspicion of having such a problem again.

Turning Sharply and Backing

Next, the groom will be asked to turn the horse in a tight circle on either side. This is done with the groom standing in one spot and the horse doing the turning – not the reverse, as sometimes happens. It is important to carry out this exercise briskly while watching how the horse places its feet and especially how it crosses its hind limbs.

Then the horse is backed (Figure 8.11)

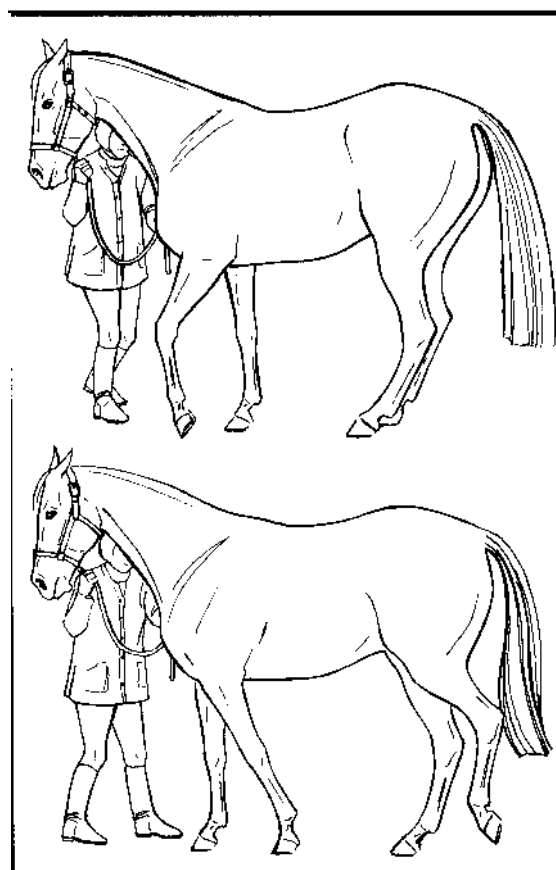


Figure 8.11 A horse backing will extend the hind limbs equally and freely. There should be no abnormal jerking of the tail

for five or more strides, watching the ease with which it places its feet and the manner in which the tail is carried. Hesitancy caused by shivering can result in the limbs being improperly placed, or the horse may not be able to back; the tail may also be seen to shudder at this time. Some horses with back pain may refuse to back at all. This part of the examination is a vital indicator to the health of the nervous system.

Further Procedures

Lungeing the horse at the trot on a firm level surface is now part of the recommended routine examination procedure in the United Kingdom. It is a further useful means of detecting lameness, especially as some lamenesses are accentuated when a horse is on the turn. It is also an added opportunity to judge the animal's action, although lameness caused by loose shoes is commonly more marked at this time.

Flexion Tests

Flexion tests are carried out at this stage, after the walk and trot, at the discretion of the individual vet. Each limb is lifted and held flexed (Figure 8.12) for a period varying from half to two minutes, depending on the operator. In most cases, an opinion of limb soundness will already be formed and it is unusual to find lameness after flexion where no prior suspicion of abnormality is suspected.

It is necessary in any examination to be reasoned and rational, to give a sound animal every chance to show itself sound. There is no justification for any examiner causing a horse to go lame, either by trotting it on a surface which is not fit for the subject or by carrying out tests which, by

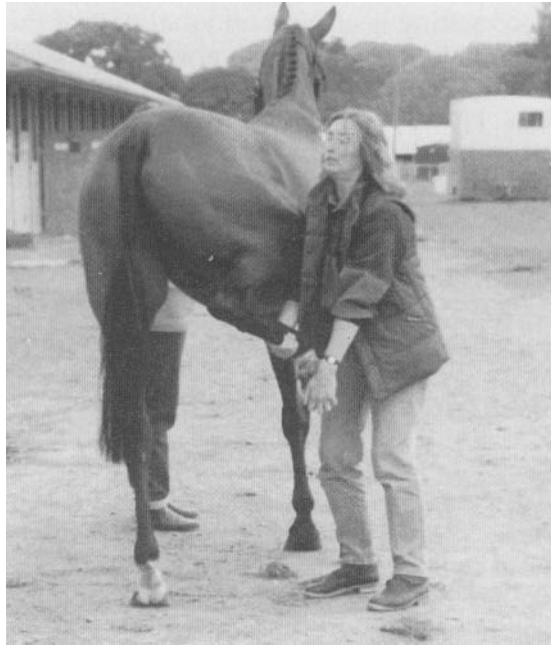


Figure 8.12 *Flexion testing being carried out at a sale yard*

their very nature, may cause lameness to arise of its own accord.

It should be said that the purpose of any such test is to expose lameness due to arthritic or other lesions which may not be otherwise evident. Originally, the test in the hind limb was said to be a test for spavin. However, it stands to reason that any joint flexed during the procedure is likely to be affected, as well as other remote structures. Very often, flexion will exaggerate spinal derived lameness and could also have an influence on muscle coordination.

Lameness diagnosis, ideally, is based on a study of action and movement as well as manual examination of the anatomy. Most lesions which will cause an animal to become lame after flexion are detectable, or have an influence on action which is visible to the naked eye.

Hoof Testing

Hoof testing is also an optional part of the examination which will always be used where there is suspicion of foot unsoundness. However, any horse unsound of foot subjected to the examination as recommended here (especially if trotted vigorously over a range of surfaces and gradients), will show lameness without hoof testing.

Joint Mobility

Tests for movement of joints are carried out by lifting the limb and rotating the joints individually. Restriction of movement will always, I believe, be accompanied by gross abnormalities which are visible to the eye. If a horse cannot move its limbs normally at rest or in slow paces it will not usually move them normally in quicker motion or at faster paces.

Shoeing

Finally, when examining horses at the walk and trot, make allowances for loose or missing shoes. If a shoe is very loose, it should be removed, and, perhaps, the examination not be proceeded with until replaced. Ideally a horse would have all shoes on or off. A horse just off grass with feet unprepared might trot lame, but would generally be examined successfully, providing the feet were in good order. However, any vendor presenting a horse for examination in need of shoeing is taking the chance of losing the sale. It is surprising how many do this simply to save cost.

A former colleague examined and passed a horse sound while it was wearing only three shoes. The horse had navicular disease and was lame as soon as the fourth shoe was put on. The vet in question had to pay the price of the horse.

9

The Wind under Strenuous Exercise

Before commencing this part of the manual examination, we shall consider some factors of importance.

Anatomy of the Lungs

The trachea divides into two bronchi terminally, and each bronchus thus formed supplies one lung (Figure 9.1). These bronchi then divide to form numerous smaller bronchioles, which end in minute air sacs called alveoli. The alveoli are in very intimate contact with the blood – which circulates through in thin-walled capillaries – and provide surfaces across which gas exchange occurs. Oxygen is taken up by the blood and carbon dioxide released for removal from the body.

A very large total area (several hundred

square metres) is provided for gas exchange within the lungs, though all this is not in use during normal resting respiration.

However, it comes into play with greater demands for oxygen, as when a horse is exercising strenuously.

The lungs are organs of a spongy consistency, with a normal elasticity which is evident in post mortem specimens. Gravitational influences on normal breathing in resting horses means that the listening area for examination is best confined to the lower chest wall at this time. However, after exercise, the lungs are more extensively in use and examination over a wider area is possible. At rest, lung sounds are best heard in the ventral thorax, behind the heart on either side, and back towards the end of the ribcage on a rising plane.

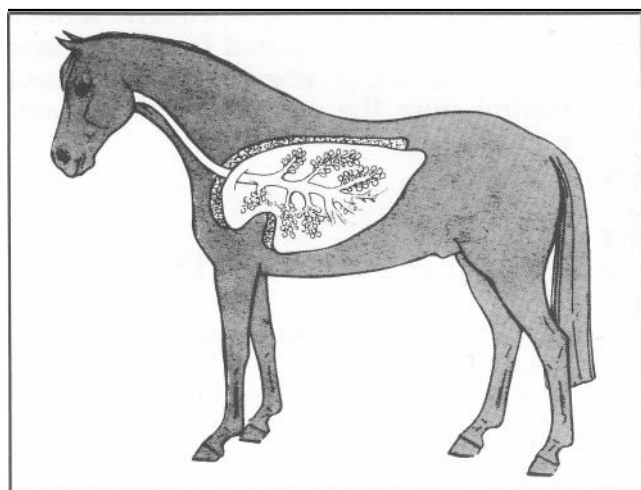


Figure 9.1 *The lungs and trachea*

Lung Sounds

The normal lung sounds are phonetically described as vee-eff, and, in fact, sound very similar within the lungs to the intake and outflow of our own breath. In a normal horse, these sounds are clean and unblemished, with no whistles, dead areas or wheezes.

Areas of pneumonia make little noise as the lung tissue involved is consolidated and no air passes through. However, on the periphery of these lesions, wheezing sounds and pleuritic clicks and rubs are generally evident. Having said that, adult horses have a lower incidence of pneumonia than other animals, but they have a higher incidence of chronic low-grade lung diseases such as COPD, allergies and related conditions.

Surface Examination

Examination of the lungs appears superficially simple but still requires experience.

The lungs are examined by stethoscope, watching, at the same time, the rise and fall of the chest as it expands and contracts. The observable character and rate of breathing is very important as horses with even mild respiratory problems often display symptoms best when at rest. Marginal increases in the depth and rate of breathing may accompany a virus infection, or there may be delayed expansion of the lungs with problems such as COPD, even in its milder forms. Localised areas may be found to have abnormal sounds – including wheezes and indications of fluid or mucus present – when examined by stethoscope, and there may be double expiration as air is expressed from the lungs. This happens because the abdominal muscles assist when the natural recoil of the lung is inhibited and air above a basic residual level is not otherwise expired. This is easily detected on the lower surface

of the abdomen through the development of a heave line – a marked line on the lower rib cage and abdomen on either side – which is not necessarily a permanent feature, except in horses so chronically affected that there is hypertrophy of abdominal muscle. Many heave lines vanish if the clinical condition in the lung is reversed.

The whole of the breathing cycle is of great importance, and many abnormal horses will show signs of trouble even at the earliest stage of the examination. The problem encountered may well be only a simple allergy to hay or straw and the degree of interference may not affect any animal required for competition other than racing. However, the condition, as far as the vet is concerned, has to be noted and recorded for discussion with the buyer. A decision on its importance against the purpose for which the horse is required may be made later, in marginal cases, but will be the cause of rejection if the buyer so decides. Conditions of the respiratory system are not all progressive and many horses live fully useful lives despite possessing lungs which are less than perfect. Once the problem is recognised the animal can be kept free of dust, spores and other precipitating factors, and might never be seriously diminished as a riding animal. It is particularly serious when a horse is required for racing, and when the buyer does not have direct control over the animal's environment, e.g. at livery.

Special Indicators of Disease

Any evident effort in breathing suggests possible abnormality.

1. In a normal horse at rest the respiratory rate is between 8 and 12 cycles per minute. Generally there is no indication of effort in this and both in-

halation and exhalation are almost imperceptible. The chest wall rises and falls gently and there is slight movement at the nostrils.

2. There should be no marked abdominal element in normal expiration.
3. In some disease states the heave line extends back from the base of the rib cage on the abdomen.
4. The colour of the nasal membranes tends to change in disease. In the normal horse they are a healthy pink.
5. Coughs or evident wheezes when a horse is standing at rest are abnormal.
6. A horse in negative respiratory balance will very often take a deep sighing breath while in the stable. While this does not have to mean disease, it is a warning to be taken seriously and can mean that there is an underlying problem.

The nasal mucous membrane is an excellent indicator of respiratory health. Gross dirt at the nostril may indicate dust from hay or bedding which has been inhaled and is being brought back up again, or could result from other forms of atmospheric pollution. Ammonia, from stale bedding, is a known irritant and can cause reactions in surface tissues that foster infection.

Membranes irritated by ammonia tend to be deep red and appear inflamed. Deep discolourations may also relate to chronic circulatory problems, to congestion or emphysema, or to invasion of the system by infectious organisms – most commonly viral in nature.

Increased Respiratory Rates in Normal Horses

In a normal uninfected animal at rest, respirations may increase because of:

1. Dust or dirt in the environment.

2. Lack of ventilation.
3. Excessive humidity.
4. Too high a temperature in the stable.
5. Unclean bedding with a high ammonia content.
6. Indigestion with excessive gas production.
7. Pain.

Increased Respiration in Disease

The change from a normal state to one which is indicative of disease, is a path with many gradations, but an increase in breathing rate does not have to mean disease.

Horses with mild COPD, or current viral infections, will often show a significant increase in respiratory rate, and greater than normal effort in both filling and emptying the lungs. But, on occasion, the increases can be so slight as to stump even experts. It needs to be understood that horses in the recovery stages after infection may have residual lung damage and hence respirations are still increased in number, particularly after exercise.

Respirations could also be increased if the animal was anaemic after infection, or with worms.

Furthermore, fit horses have lower resting heart and breathing rates than those which are not, so these animals may have increased rates – indicating disease – that are still within normal ranges for other animals.

Clearly, we are describing here horses whose respiratory condition is marginal, otherwise they would be unlikely to be presented for soundness examination. Symptoms greater than these would be clinical and not easy to mistake. However, it is important to know the normal in order to identify the abnormal.

Auscultation

The essential part of veterinary examination of the lungs is with the stethoscope. The vet will listen for evidence that the lungs are expanding and taking air into their deeper recesses. Areas of solidification – indicative of pneumonia – will be sought, as will extraneous noises such as rales (crackles) and squeaks that are heard when pathways are clogged with foreign matter – like pus and mucus – from either mechanical or infectious causes.

Endoscopy

Under normal examination conditions, horses being tested for soundness will not be examined by endoscope, except where this is specifically requested, or a condition of the sale being carried out. In sale yards, endoscopy is only routinely used for conditions of the larynx and is not concerned with problems that may exist further down the trachea. In private sales, a racehorse might be examined fully, where it was transferring from one racing yard to another and it was a condition of the sale that it be scoped to eliminate the possibility of the existence of respiratory disease, particularly infection.

In most sales, however, mild viral infections are not detected and do not influence the outcome of an examination, nor is endoscopy an option in all such situations.

Lungeing

The wind examination is most easily accomplished with the horse ridden, but is adequately managed on a lunge rein (Figure 9.2) in the case of unbroken horses. Once the burden of work is easily carried out, the horse free, balanced and

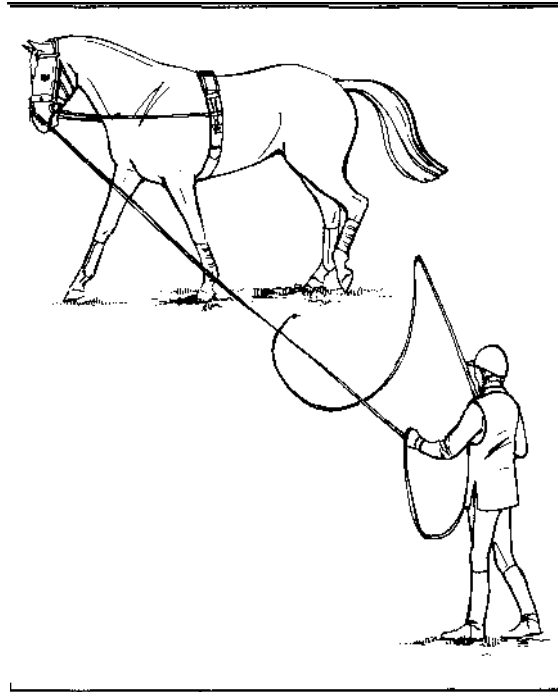


Figure 9.2 *Lungeing the horse*

willing, there is little problem, but the facilities must allow for the respiratory system to be placed under adequate pressure to reach a high breathing rate.

The following are essential for lungeing:

1. An appropriate place in which to carry out the test.
2. That the animal be in a fit state to be lunged.
3. That there be proper tack for the purpose.
4. Someone competent to carry it out.

While these requirements may appear simple, it is extraordinary how many problems arise at this stage of the examination. It is vital that the area chosen has a surface that is level and that it provides adequate grip. The area is also preferably confined and railed in, so that the animal being lunged has no opportunity to take off.

Even major sales yards sometimes fail to provide facilities which allow for safe and

adequate exercise. The consequence of an inadequate test is the prospect of an inconclusive result being reached. Alternatively, this part of the examination may not be completed and the sale could fall through on that account. There is also risk of injury to horse and man.

For the veterinary surgeon, the problem of signing a certificate where there has been an inadequate test is commonly met and never welcome. The only option where not satisfied is to state this on the certificate. The animal is therefore not certified as being sound of wind and the purchaser may seek an added warranty on this or the sale may, in fact, fall through. The conclusion will often depend on the conditions of sale in a public sale yard where items such as 'unbroken horses may not be tried for their wind' could operate. Such a clause, if a condition of sale, may be binding within the terms of that sale. A buyer might then not have the right to try an animal for its wind, which can be the cause of bitter dispute.

Furthermore, such a condition could easily lead to abuse and be used by an unscrupulous vendor to hide what he knows, i.e. that an animal is, in fact, unsound in wind. It is an uncommon sale condition, but it does occur, and is grossly unfair to buyers.

There is no doubt that the unscrupulous horseman will always play the rules to their full extent, and this is something of which a buyer must always be aware. But there is, equally, no doubt that some conditions of sale, designed to increase efficiency, assist the aspirations of the dishonest rather than protect the rights of the honest.

Respiration at Faster Gaits

The nature of respiration at the canter and gallop allows for one complete breathing

cycle for each stride taken. The lungs start to expand as the last supporting limb leaves the ground and empty fully with renewed ground contact. The normal inspiratory sound is almost silent, but is accompanied by flaring of the nostrils and expansion of the lungs. The normal expiratory sound is described as being like a sigh. It is certainly more pronounced than the inspiratory noise and is caused by the rush of air out of the lungs as the horse makes contact with the ground.

A critical time in movement is when a horse is inhaling air and the limbs are all off the ground (Figure 9.3). If there is any barrier to air inflow – most common in the region of the larynx (Figure 9.4) – an abnormal inspiratory noise will be heard at this time. This noise can vary from a very fine whistle, heard as the horse begins to breathe in, to a thicker rasping sound – described as roaring. The typical noise is caused by failure of the vocal cord on the left side to be retracted out of the incoming airflow. This causes turbulence in the flow and thus the abnormal noise heard. Inspiratory noises may also occur with other conditions of the airways, e.g. pharyngeal lymphoid hyperplasia.

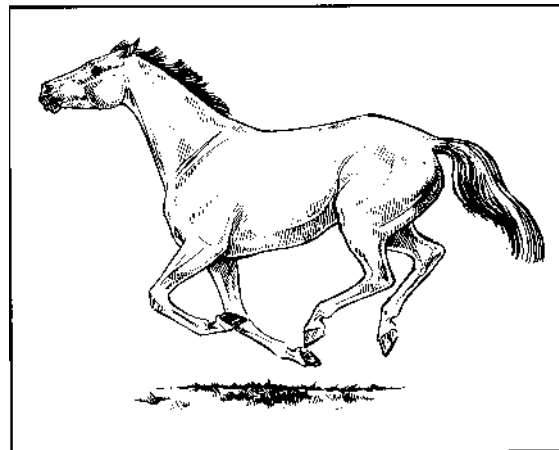


Figure 9.3 *The point of suspension. When all four limbs are off the ground, the horse is inhaling. This is the point when any abnormal respiratory sound is heard*

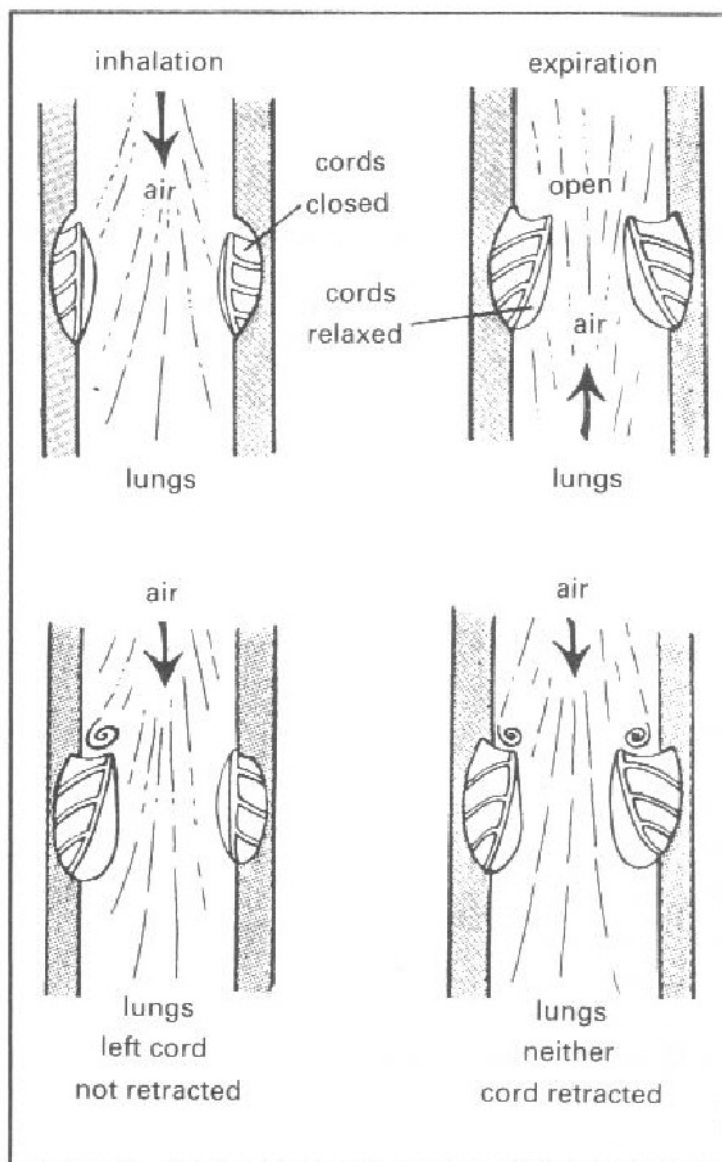


Figure 9.4 Functional diagram of the larynx

Under normal circumstances, any such noise will mean rejection – unless the buyer is aware of the problem and prepared to accept the animal despite it. This may depend on the use for which the horse is intended. In some public sales, detection of a noise will only lead to rejection if abnormality of the larynx is seen on endoscopic examination.

It is hard to be definitive on this subject as many inspiratory noises prove to be transient and disappear in time. However, from the point of view of the immediate examination the animal is unsound and will be rejected therewith, unless the buyer requests further examination. Even where an endoscopic examination is carried out, if no gross abnormality is seen

throughout the visible areas of the tract, the animal is unlikely to be passed, unless conditions of sale state it should be in these circumstances. However, many noises are not significant, and horses with known breathing problems are often able to perform satisfactorily despite them. A recent Grand National winner is reputed to have been operated on twice for his wind.

The Test

The procedure for exercising the horse usually consists of a gentle warm-up, which will depend largely on the facilities available. In a small paddock, for example, the horse is first trotted then lunged at a steady canter on either rein until found to be blowing adequately. Sometimes a noise will only be heard on one diagonal and not the other, so it is important that the length of exercise is adequate and decided by the examiner, not the vendor.

The horse will be extended as far as can be done with safety, but the examiner will have to satisfy himself that the test is adequate before issuing a certificate. Fat and unfit horses may blow with ease but without allowing a decision to be made on abnormal noises at inspiration.

For the examination to be carried out with minimal fuss and least risk, it is necessary that horses likely to be tried for their wind should spend some time prior to a sale being prepared on the lunge. They should be trained to canter in a circle with ease, and be fit enough to withstand the required exercise without becoming distressed. Some people have the mistaken idea that young horses are harmed by lunging; it is not true. Virtually all Thoroughbred yearlings are taught to canter on the lunge, as examination of the wind is obligatory at most yearling sales now.

Unfit Horses

If a horse is too fat or unfit, or is suffering from COPD or a virus infection, it will be found to blow quickly and become distressed easily. Such an animal will probably have raised a doubt before ever getting to this stage, although if simply fat or unfit it will not. In these latter cases, it may be virtually impossible to try a horse adequately, because it may keep pulling up and breaking from the canter, or become distressed from the effort before it is subjected to an adequate test. In such a situation, there is often little point in carrying on. The animal is either rejected, or the vendor may give the buyer an extended warranty with regard to its wind, if eager to sell the horse. Alternatively, the examination may be suspended and resumed at a later date, when the horse must be in a fit condition to undergo its test.

When presenting young horses for this test, it is critical to their welfare that they be fit and ready to undergo it with ease and without distress. However, some vendors arrive at sales with unbroken horses that have never seen a lungeing ring, or, indeed, have never been led at any gait faster than a walk. They are fully satisfied if their pet toddles round in a circle at its leisure. Most, if asked to chase the animal – to make it canter – are very quick to blow themselves!

Ridden Test

When a horse is to be ridden (Figure 9.5), it is important to watch the tacking-up with care, observing any indications of pain as the girth is tightened. When the rider mounts, a cold-backed horse will generally dip its back and may continue like that for several strides. This could mean that there are back problems,

although some horses always do this without showing any associated lameness. It is best to ask the rider to trot the horse away and back in a straight line because some lamenesses only appear at this time. Needless to say, any lameness here would automatically end the examination.

The horse is then warmed up gently through its gaits, first at an extended walk, then trotting and finally at a steady hack-canter. After this, it is extended at a faster gait. This may be done on a wide circle or could be arranged on a set gallop (over a set distance), where the vet may meet the horse at a given point towards the end of the gallop, for example. The horse will usually pass at full gallop, and the vet can then hear clearly if there is any abnormality on inspiration. If the horse is ridden back quickly after pulling up, any noise that was made may still be audible, though, more commonly, it is not.

Silent but Abnormal

It is unusual for horses to be unsound of wind without making any inspiratory noise, but it does happen. This sometimes occurs if there is full occlusion of air intake at some stage of the inspiratory cycle. Such occlusions may arise from the epiglottis, or soft palate, but are capable of occurring in other places. Interference with air intake due to soft palate paresis is most likely to occur in the later stages of a race, when a horse is under pressure. In some cases the cut-off is detectable as it happens, though it may take a very astute observer to note it. More commonly the animal is said to choke and simply pulls up in its race. While these conditions are regularly detected endoscopically, and treated successfully by surgery, they can be very difficult to detect during the course of routine examination for soundness – especially if the horse is not ad-



Figure 9.5 The horse ill gallop. The effect of such exercise is to fully expand the lungs of the horse, enabling the vet to gauge abnormal development if present on examination

equately exercised. They may not show themselves even at the end of a sharp gallop, and may not be suspected. Very probably, a lunged horse will never be pushed to a point that would expose such a problem, but then young unbroken animals are unlikely to suffer from the condition in the first place.

In Ireland, and in parts of the USA, horses are grunted for their wind, which

consists of stimulating a quick intake of air by approaching the animal threateningly. Abnormal noises may occur due to incomplete removal of the vocal cord out of the airflow as the animal takes in air. However, horses that make abnormal sounds at this time are not necessarily unsound and unsound horses may make no noise when grunted. This test is not routinely carried out in Britain.

Bleeders

Bleeding from the lungs also occurs, most commonly, after strenuous exercise. It is generally a condition that occurs in race-horses and happens at racing pace. It is seen more frequently as horses get older and is very difficult to detect on examination for soundness, even with endoscopy. In the USA, horses known to bleed have to be declared as 'Bleeders'. The same could apply in Europe with good purpose. The information could be coupled with declarations that a horse is free of vices.

The Lungs after Exercise

When the horse has completed its exercise test, the vet will listen extensively to the lung field for abnormal respiratory sounds. At this stage, with the lungs expanding fully, the extent of normal air space is better gauged and any abnormal sounds are easier to pick up.

The rate at which respirations return to normal is indicative of fitness, health and the extent of the work. It will be slower for fat, unfit horses, and for those suffering from any degree of respiratory disease.

The Heart after Exercise

While the heart will have achieved a maximal rate – depending on fitness and the extent of the exercise – it will already be

slowing considerably by the time the horse returns to the vet. Murmurs that are prominent at this stage will be judged with increased gravity. The pattern of the dropping rate should be regular and without evident indications of stress. A diseased heart may have difficulty in coping with the workload and show considerable irregularity now.

Buyer's Choice

It is open to a buyer, in full possession of the facts, to decide on whether or not to buy an animal. It may be decided to proceed if a particular problem is not considered to interfere with competitive ability, for example, once the opinion declares the condition for what it is and explains its likely progress. There are some horses that always make a noise when they are unfit and whose inspirations come clean as they proceed in their work. Many noises are nothing more than that – a noise – and do not affect the performance of the animal as an athlete. Many others are the residual consequence of infection, and pass off in time as the animal recovers.

However, some laryngeal conditions do seriously affect ability, because of limiting air intake, and these render the animal unsound. No animal that has been operated on for any of these conditions can be considered to be sound either, although many have a successful competing life thereafter. Their existence inevitably affects price.

10

The Organ Systems

The horse's body is composed of a number of organ systems. We have discussed the heart and eye (see Chapter 2) and now look at others.

The Nervous System

The importance of the nervous system to the soundness of the horse is basic and fundamental in an animal that is mainly to be ridden either for pleasure, competition or work. The nervous system is complex and controls such factors as balance and motion, but also is intimately involved with the normal functioning of organs such as the heart, respiration, the digestive system, etc. No body organ, in fact, functions in isolation from its nervous system in the normal healthy animal. It therefore becomes crucial to detect abnormality in this system, in a manner that is both easy and effective.

First, we consider some of its finer detail.

Anatomy of the Spine

The spine or vertebral column is the bony skeleton of the neck, withers, back and tail (Figure 10.1).

It contains the nervous continuation of the brain, the spinal cord, and consists of seven cervical vertebrae; eighteen thoracic

vertebrae, each of which gives support to a pair of ribs; six lumbar vertebrae; the sacrum; and approximately eighteen coccygeal vertebrae. All these bones have a common structural plan, being built from three basic components: a body, an arch and processes – each of which have different proportions, and importance, in the various parts of the spine. The function of the bony spine and skull is to protect the delicate nervous tissues held within them.

The Cervical Vertebrae

The first two neck bones, the atlas and axis, differ structurally from the other five, and also from each other (Figure 10.2). The vertebral canal, through which the spinal cord passes, is of greater diameter in these than in later vertebrae, a precaution against damage to the cord in an area subject to a great deal of movement.

The axis is thickened and divided along its upper edge into two ridges. Some neck musculature attaches here but, more importantly, attachment is given to a portion of the *ligamentum nuchae*, the strong central ligament of the neck which is made of two parts:

1. A funicular, rope-like portion which passes forwards from the highest dorsal spines of the withers over the top of the spinous process of the axis to

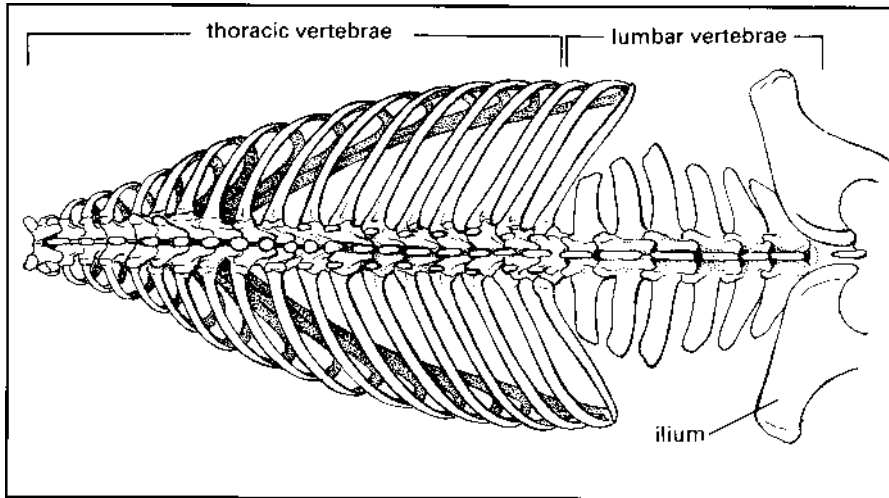


Figure 10.1 Dorsal view of the spine between the neck and pelvis

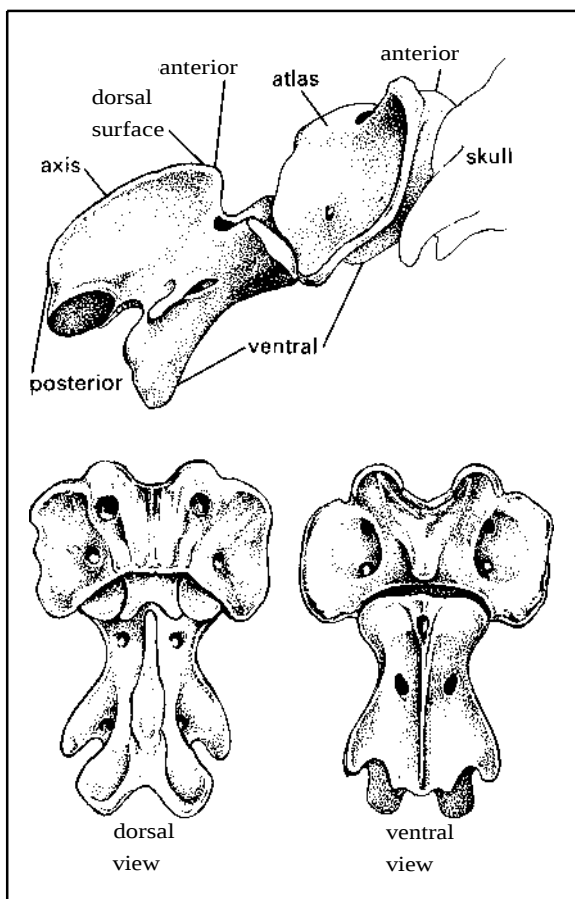


Figure 10.2 Atlas and axis (top) from right side of the neck; and (bottom) dorsal and ventral view

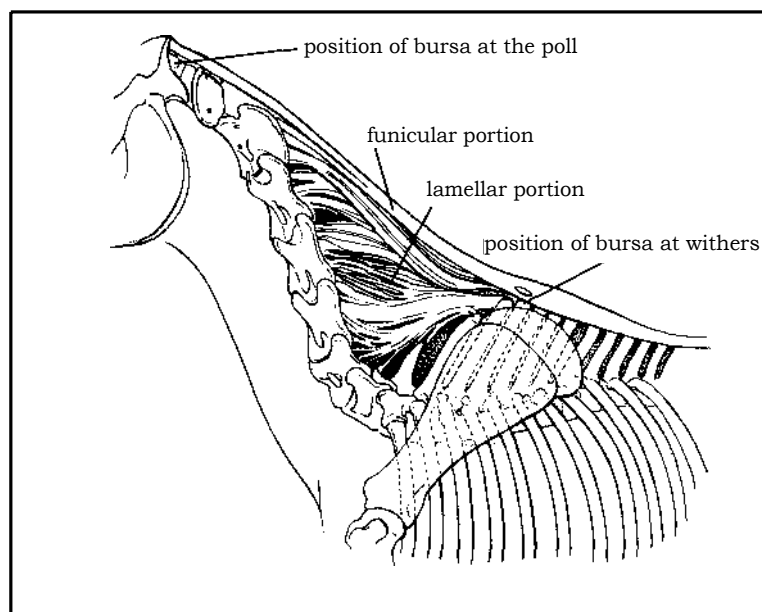
become attached to the nuchal crest of the occipital bone of the skull.

2. A lamellar portion which lies in the middle of the neck and throws out branches in fan-like formation. These are attached at their upper ends to the underside of the funicular portion and insert on the dorsal surface of the middle five cervical vertebrae below.

The *ligamentum nuchae* (Figure 10.3) supports the position of the head and neck, and, being elastic, also permits the head to be influenced by gravity as well as being raised and lowered by means of the neck muscles. The funicular portion is best viewed as a continuation forward of the supraspinous ligament which extends along the back from the sacrum. This attaches to the tops of all the spinous processes of lumbar and thoracic vertebrae en route and its function is to bind these bones together.

Two synovial bursae are associated with the funicular part: the atlantal bursa lies between the ligament and the arch of the atlas; the supraspinous bursa lies over the second thoracic spine at the withers. These bursae are the centres of disease in poll-evil and fistulous withers.

Figure 10.3 *The ligamentum nuchae*



The remaining five cervical vertebrae conform more to the normal vertebral plan having a body surmounted by an arch which surrounds the vertebral canal. Of particular interest are the transverse processes which are prominent and plate-like. These project laterally and have thickened edges which serve for muscle attachment. In a horse in good condition their lateral surfaces can be felt deep on the side of the neck.

great size in the early vertebrae reaching their maximum height at the fourth and diminishing to the fifteenth or sixteenth. The first fifteen spines point backwards, the anticlinal vertebra is vertical, the last two incline forwards. Out of the eighteen thoracic bones the first seven lie partly behind the scapula, which also covers the heads of the third to seventh ribs. There is very limited movement in any direction in the thoracic spine of the horse.

The Thoracic Vertebrae

The thoracic vertebrae (Figure 10.4) demonstrate the typical manner in which neighbouring spinal bones are linked together. The vertebral bodies are short when compared to those in the neck, but like them are united by intervertebral cartilage, the so-called vertebral discs. At each side of the body, before and behind is a cup-shaped cavity for articulation with the head of a rib.

The thoracic spinous processes are of

The Lumbar Vertebrae

There are usually six lumbar bones, but occasionally only five. In the latter case, an extra thoracic vertebra will exist and this is found especially in eastern breeds such as the Arab. The lumbar vertebrae (Figure 10.5) are remarkable for the length and width of their transverse processes which project at almost right angles from their bodies. Each may be 7-10 cm (2.8-4 in) in length and 2-3 cm (0.8-1.2 in) in width.

In the region of the loins the vertebral

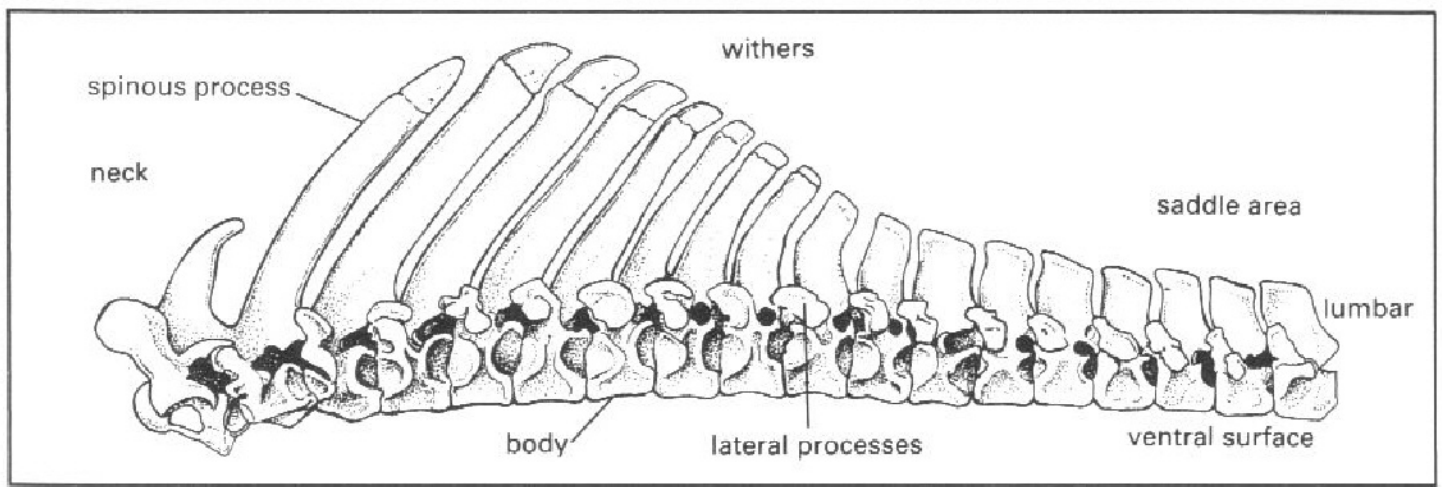


Figure 10.4 *Thoracic vertebrae*

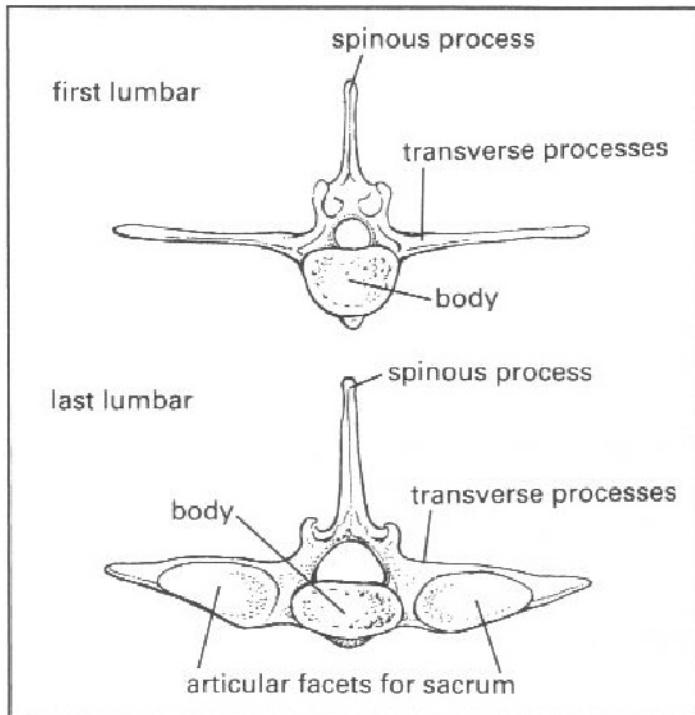


Figure 10.5 *Lumbar vertebrae in posterior view*

column has a strictly defined and very limited degree of movement.

The Sacrum

A composite bone, the sacrum (Figure 10.6) lies beneath the loins in the region of the croup. It is composed of five vertebrae fused firmly together. Sometimes the first of the coccygeal vertebrae will be found solidly fused to the sacrum giving the im-

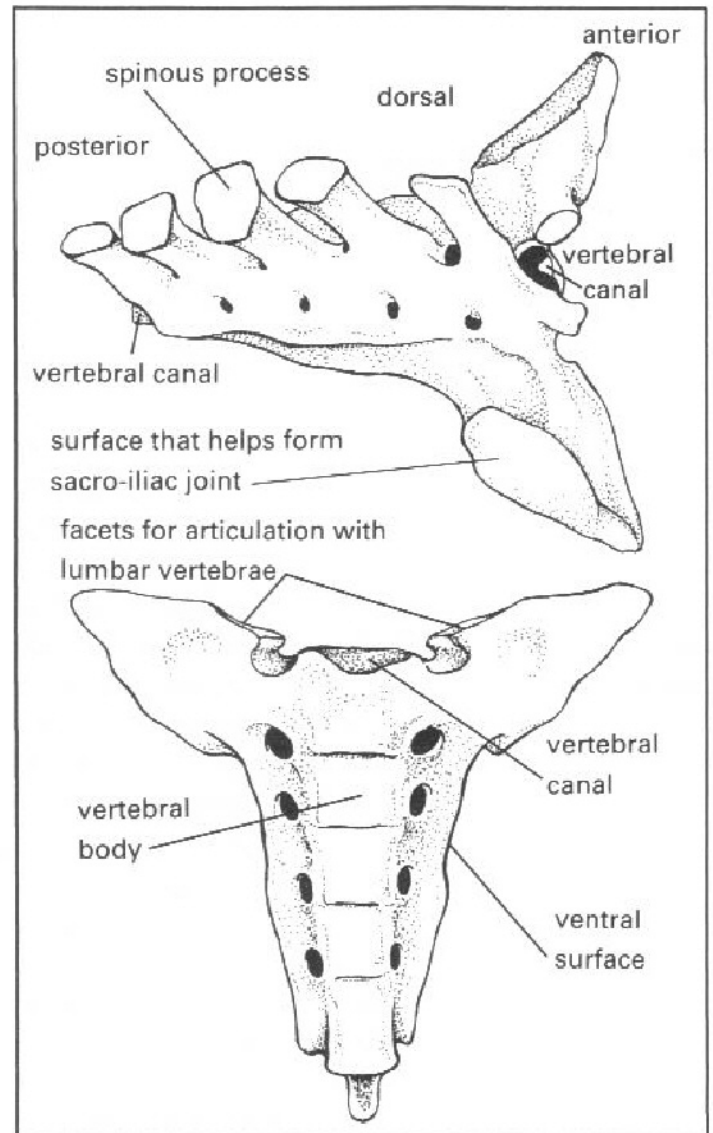


Figure 10.6 *The sacrum*

pression that it contains six bones instead of five. The sacrum is triangular in form and lies in the roof of the pelvic cavity

with its posterior a little higher than its anterior end.

The pelvic bones are united to the sacrum on either side. These are not joined by typical synovial joints but by an interosseous ligament composed of short, strong, white fibres, the sacroiliac ligament.

The Coccygeal Vertebrae

There are usually eighteen coccygeal, or tail, bones, which follow the sacrum.

Spinal Movement

The spine of the horse exhibits only limited movement except at neck and tail. The movement that does occur in the thoracolumbar region is found between individual thoracic vertebrae, between the last thoracic and first lumbar vertebrae, between the first three lumbar vertebrae, and at the lumbosacral junction. The total lateral deviation has been estimated in the region of 15-20 cm (6-8 in) for the full length of the fixed part of the spine. This movement is necessarily dependent to a great extent upon the thickness of the intervertebral discs, which are firmly united to the bodies of the vertebrae. With advanced years calcification is common and very frequently further outgrowths of bone act as bridges between bones making union almost complete.

The vertebral column is the axis upon which the limbs act to produce movement and is flexed in the thoracolumbar area by forces produced by pushing back the hind limbs against the ground. Sideways forces, resulting in lateral oscillation, are clearly apparent at the walk. At speeds higher than that, however, muscular resistance makes the column as rigid as

possible in order to eliminate this sideways movement.

Above and below the spinal column, muscles co-operate by simultaneous contraction in an effort to counter attempts to flex the spine. When the synchronisation between these muscles fails, as during a fall or even galloping on level ground – and sometimes during anaesthesia – fracture of the back may occur. The damage usually takes place in the thoracic region.

Surface Examination

Surface examination of the spine is conducted manually, and is aimed to detect muscular spasm, pain on manipulation and limitations of movement that might indicate pressure on, or damage to, nerves. Any gross distortion of the upper outline of the bone will be taken into account. This could occur from direct injury from a fall, but some such swellings could arise from infected saddle galls, or disturbances to the upper ligament of the spine, or the periosteum of the spinal processes. Alternatively, minor movements of vertebrae can lead to visible disturbances which are often corrected on manipulation.

Functioning of the Nervous System

In order to understand how the nervous system functions, it is important to appreciate the manner in which it outwardly demonstrates its existence. Firstly, the nervous system is divided into brain and spinal cord. These communicate with the organ systems through the peripheral nerves, of which there are 42 pairs coming off the cord and emerging from between adjacent vertebrae. These may supply muscle, tendon, ligament, etc., evidence

for the health of which is gained from the normal movement of these structures.

The nervous system, however, is further subdivided into autonomic and voluntary systems.

The Autonomic System

The autonomic system is beyond voluntary control and operates organs such as the heart and blood vascular system, respiration, the digestive system, etc. Its health is vital to normal functioning of the body.

Common expressions of failure of this system would be evidenced by heart rhythm irregularities or conditions that might affect the control of respiration, or inhibit normal contraction of the bowel. Happily these are conditions which are not a common problem for young healthy horses, though the likelihood of them occurring increases as an animal grows in age.

Still, as clinical expressions of disease in equine practice, abnormalities of the autonomic nervous system do not rank very high, with the possible exception of grass sickness.

The Voluntary System

The voluntary part of the nervous system - that which allows animal to move and relate directly with its environment - is more subject to direct dysfunction. Nerves, as a simple example, can be mechanically injured. Paralysis is the common result of this, as is sometimes seen in the shoulder and forearm after injury to the radial nerve. Similar injuries may affect nerves in any exposed area of the body. Pressure on nerves emerging from the spinal cord is believed to be one

of the most common causes of lameness in jumping horses. This is thought to occur through minor displacements of the bony structures.

Reflexes

The nervous system operates extensively through the presence of reflexes which are controlled by simple reflex arcs; these allow for many different types of reaction to external stimuli. For instance, when a sharp object is pricked into a leg (Figure 10.7), the immediate withdrawal of the limb is a reflex action, done without thought, a spontaneous consequence of the insult. The animal may then decide to kick, but this is now a voluntary act, operating directly under the central control of the brain. Some reflex arcs, however, may be less easily understood than this. Take, for example, some reflexes involved in locomotion. Sensory nerve endings exist in muscle which are triggered by contraction and relaxation. Such an action in one leg might result in the consequent relaxation or contraction of a muscle in another limb. Note how, at the walk, one forelimb is contracting and being protracted as the other is weight bearing and in extension. One of these actions stimulates an opposing reaction at the other end of a reflex arc. While a certain amount of this movement is within voluntary control, a great deal is reflex, but still under the control of higher centres which will decide on avoiding action, when needed, or when to pull up.

We see the functioning of reflexes as a normal part of ambulation and only detect their loss as a failure of movement or co-ordination. Yet this failure may well be an indication of injury or disease in the nervous system and so is important. The problem is to be able to detect the differences between normal function and what is unsound.

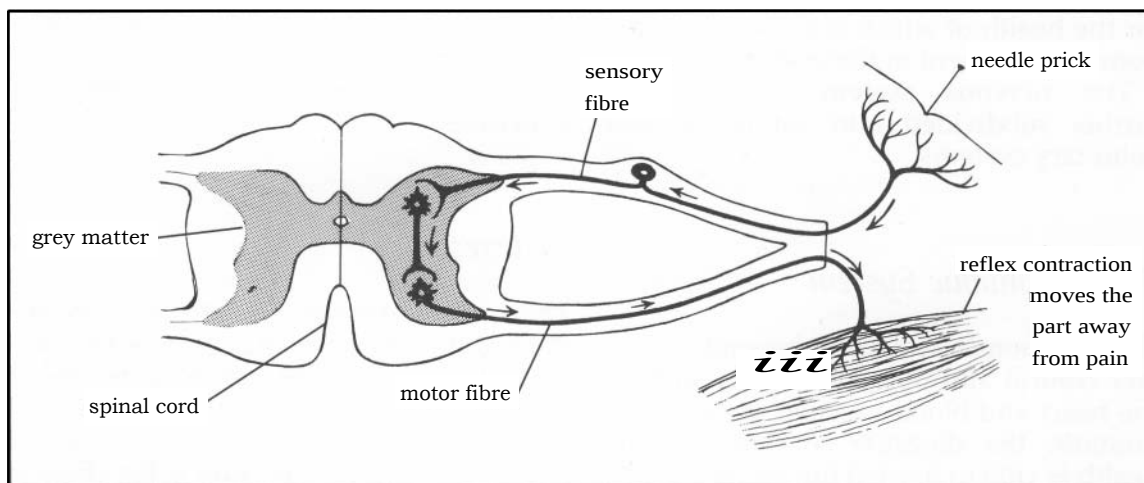


Figure 10.7 *The reflex arc*

Reflexes also operate from areas such as the tongue, the nasal passages, the bowel, skin, etc. Although sweating normally occurs under reflex control – due to excess heat in the body – anhydrosis, or inability to sweat, is not a failure of a reflex arc, but an inability of metabolic origin and therefore remote from direct control of the nervous system.

The skin is necessarily covered with sensory organs which act through reflex arcs for the simple means of adapting the animal to its environment. These may vary from simple reactions to heat and cold (dilating or constricting blood vessels), or involve bringing more blood to an area in need of it, perhaps after injury.

Gauging the Health of the Nervous System

The health of the nervous system in soundness examination is an important matter, requiring an understanding of the healthy animal, and checking as far as possible that all nervous pathways are working. Needless to say, intimate details of digestive, urinary and blood-vascular efficiency are not readily gauged on a

quick visit to a horse in a stable. Yet there is a great deal we can glean from observation.

The influence of diarrhoea or constipation for any length of time will result in an unhealthy looking animal which may well be short of condition, have a dull coat and possibly be dehydrated. If blood is not circulating properly, there will be signs of general ill-health, coupled with indications of trouble in the heart and respiratory systems. Blood travelling to the lungs could be inhibited in its flow by faulty heart pumping which might lead to respiratory distress and inadequate oxygenation of tissues – this would be noted in examination of the mucous membranes. Thus, there are nearly always detectable signs of problems which may emanate from the nervous system, perhaps reflected in general ill-health related to more remote organs.

A most important aspect of nervous health in animals intended to be ridden is the locomotory system, affecting bone, muscle, tendons, ligaments and joints. All these tissues work together but signs of abnormality are expressed most commonly in the failure of natural reflexes.

The following points are important in examining this system:

1. At the start of the examination, note is made of the action of the limbs when the horse is moving over in its stable.
2. When it is being turned in hand for the walk and trot, the placing of the fore and hind feet is important, as is balance as the turn is negotiated.
3. When the horse is turned sharply in both directions special attention is given to the placement of the hind feet.
4. When the horse is backed, the placement of the feet and also tail carriage are observed.
5. Some advocate raising the head and holding it aloft for a minute or more. It is then released and the balance of the horse gauged. Abnormality here may be caused by problems in the middle ear.

At any time, a properly functioning nervous system will control all movements required, and will also permit the animal to retain its balance while so doing. An inhibited lifting of a hind leg may indicate stringhalt, which is considered to be of nervous origin; an inability to place the feet or cross them over in turning could result from spinal pathology; a spasmodic vibration of the tail when the animal is being reversed could mean the horse is a shiverer or wobbler, indicating nerve damage.

All of these symptoms indicate the presence of lesions in the nervous system and will ultimately influence any decision on its use. No degree of nervous degeneration is acceptable, although stringhalt may not limit the animal's usefulness even as a racehorse. However, even though stringhalt is operable, its presence will affect value for sale as well as creating doubts about the animal's future use.

The important thing here is that the future of a horse with stringhalt is uncertain. An owner could race it indefinitely, and could have surgery performed when thought fit. There might never be a major

problem, and the horse could perform well. However, a buyer might prefer to have a horse without the problem and that is perfectly natural.

The Senses

Each of the five senses – sight, hearing, taste, smell and touch – have their own special importance and these can be tested directly in most instances.

Sight

Besides examination of the eye by ophthalmoscope it is important to watch its reactions to dark and light or any approaching threat. Thus, as pointed out earlier, the pupil dilates in dark and contracts in bright light, and this is a facility that has to be equal for both eyes. Sometimes a pupil will be unable to do either due to adhesions of the iris and lens, but this does not indicate failed nervous control. Failure to adapt to light and dark, bilaterally, on the other hand, could be. If the lids close as a foreign object – e.g. a finger – approaches, it means the eye has seen the object and has reacted to it to protect itself. This is a response controlled voluntarily by the nervous system.

Hearing

The ear is observed for its reaction to sound, for the muscular movement of the external opening in the direction of extraneous noise. There is nothing abnormal about a horse being lop-eared, but for one ear to be different from the other could indicate injury or loss of muscle control. Judgement for hearing or deafness is

always subjective as there are no simple tests that can be carried out.

Taste

The normal working of the taste-buds is not easily detected, though the production of saliva after the ingestion of food is a good indicator. The ability of the tongue to move and assist digestion is also helpful. General body indications of any failure of the nervous system here will naturally result in poor digestion and loss of body condition.

Smell

Smell is similarly not easy to gauge, though it is quite possible that a horse could function efficiently without the use of this faculty – especially in the domesticated situation. The receptor organs of smell are situated in the back of the nasal area, on the covering of the ethmoid bone. A stallion teasing a mare may indicate his sense of smell by eversion of the upper lip (the flehmen reaction); however, some horses do this in other circumstances which might not have the same meaning.

Touch

Touch is an important indicator of nervous health. An animal will respond to external stimulation by moving away from objects it might strike against, or, perhaps, scratching on them if it chooses. Loss of this sensory capacity is usually an indication of nerve damage and is tested for in cases of suspected paralysis by gently pricking the skin with a sharp object – even the tip of a ball-point pen would do.

If the nerve supply to an area is intact, the response will indicate feeling. If there is no response the area can be considered to be nerve dead, especially if there is no normal movement of the part either. While it is possible for the motor and sensory nerves to be damaged separately, it is uncommon because they travel in the same nerve trunks.

Under the rules of the FEI, no animal may partake in competition that has been denerved. However, no standard test at present exists to detect this problem.

There is certainly no reason for the normal horse to be approached with a pin, and such tests are simply used in the course of veterinary duties on clinically abnormal animals. It would not be very gratifying to find hoards of purchasers marching about sales yards looking for animals to stick their hatpins in. If it happened, the hospitals would hardly be able to cope with the influx of injured bodies.

The Digestive System

The digestive system in the course of soundness examination is judged on the basis of the animal's condition and external signs of health. The vet will be interested in the nature, colour and consistency of faeces found in the stable – though very often this is not left under the feet, especially if abnormal. During examination by stethoscope, any gross increase of digestive sounds will be noted and should the abdomen be excessively pendulous the possibility of indigestion will be considered.

Conditions such as diarrhoea and constipation will be watched for and might be suspected on the basis of signs already taken into consideration (including staining of the hind limbs with dried excreta). If a horse were incubating infectious diarrhoea, the probability is that there would

be a temperature and/or increased heart rate.

Constipation would not be so easily detected, and, as a feature of conditions such as grass-sickness, might be difficult to uncover at the time of soundness examination. However, here also, there might be an increase in heart rate above normal and the vet will be warned by his general examination of the membranes, etc., that the horse is unwell.

The Blood-Vascular System

The heart and blood vessels are under the intimate control of the nervous system. Defective control of heart action is indicated by rhythm irregularities and problems in the peripheral circulation which will cause circulatory distress. This might be reflected in heart rate and blood-pressure changes, although this type of problem is rare in horses presented for soundness examination.

Examination of the blood-vascular system is a continuing part of the overall examination, and the heart itself is subjected to repeated scrutiny at rest, after exercise and later after the period of rest. Its ability to meet and adapt to work is critical to its functioning capacity and the speed within which it returns to a pre-exercise rate is indicative of this. Ultimately, this is the most significant factor in testing the heart for soundness, and evidence of adaptation is soon available when the horse returns to the stable after strenuous exercise.

Murmurs and rhythm abnormalities at rest are treated with careful consideration, as previously discussed (see Chapter 2). However, in the case of murmurs, sometimes of even the highest grading (rated from 1 to 5 on the basis of sound intensity) the interpretation will depend on complex matters and may even lead to further tests

being carried out in order to evaluate the true nature or cause of the sound.

Further signs of cardiac inefficiency might be found in the respiratory system – reflected in congestion due to faulty pumping of the blood – and in the membranes of the mouth, nose and eye, which will also be congested and deep coloured.

The Urinary System

The urinary system is not examined directly and has to be assessed in a subjective manner depending also on the condition of the animal and any indication that might result from its dysfunction. If there was excessive passage of urine, the animal would very probably be dehydrated with a dry tight skin and poor body condition. Retention of urine, on the other hand, would cause uraemia, with intoxication of body systems over a period of time, probable bad breath, and often discolouration of mucous membranes due to retention of pigments normally excreted.

The Reproductive System

The reproductive system in the mare (Figure 10.8) is examined, when required, by direct visual and manual inspection of the tract, using a speculum to examine the vagina and cervix, perhaps an ultrasonic scanner to help gauge the condition of the uterus and ovaries. In sales yards, such an examination would normally be done manually and the condition of the tract based on the opinion of a vet experienced in this field.

It is important that the vulva is well formed (Figure 10.9), that there is no evidence of vaginal wind-sucking and that the vagina itself is free from inflammation. Pock marks resulting from earlier virus

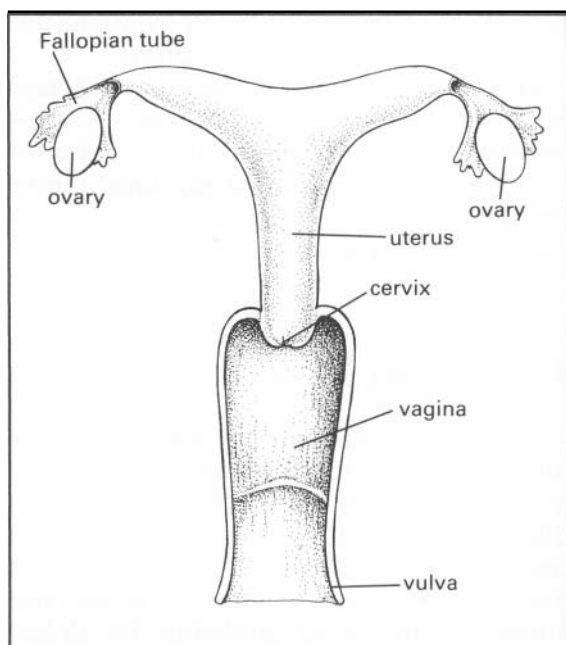


Figure 10.8 *The female reproductive tract*

infection are often seen on the vulva but are of no clinical significance once healed. If active, the examination might be discontinued, although the condition is short-lasting and tends to disappear within days. While wind-sucking is a defect, the condition in Thoroughbreds affects a high percentage of mares and is hardly a breeding unsoundness when properly managed at stud. It is the result of normal wear and tear in regularly breeding mares and is managed by a small surgical operation that is carried out in the standing position. This involves closing the lips of the vulva down as far as the brim of the pelvis. The mare is opened for foaling and stitched again afterwards. While it would naturally be mentioned on a soundness certificate it is so common as to be unlikely to affect a sale once mentioned. However, if not mentioned, it could be the cause of a mare being returned after sale.

On the other hand, signs of a previous rectovaginal fistula, where there has been extensive damage to the soft tissues be-

tween the vulva, vagina and rectum, is far more serious. Even when effectively repaired, such a condition is capable of affecting future breeding, and foaling. It is an unsoundness in most cases and would only be overlooked where a buyer was prepared to take a risk because of the mare's value, or for the chance of acquiring a very special foal.

It would not affect an animal's soundness for riding purposes, although the buyer would have to be informed of its implications for future breeding.

The cervix will be clean, healthy in



Figure 10.9 *Good conformation. The external organs of a grey mare with no melanoma formation present*

colour and free of scars and tears and any evident discharges.

The uterus will be of a soft, healthy consistency on manipulation with no evident swelling or incomplete involution in a mare that has foaled recently.

The size and consistency of the ovaries is a good guide to the stage of the oestrus cycle. A mare that is anoestrus – not cycling, as in winter – will have hard inactive ovaries with, very likely, no follicle development. In spring, on the other hand, when a mare will have benefited from the first flush of grass, the ovaries are likely to be bigger, showing definite signs of activity, with, possibly, follicles present.

The ovaries of mares coming out of training are very often small and hard at any time of the year. If they are completely inactive, the mare could be infertile, though such a situation is not very common. More likely, the ovaries will have been influenced by the training process and many such mares take time to settle down into a normal breeding pattern.

Mares that suffer from nymphomania – called squealers, because they tend to squeal consistently – are very often bad-tempered and constantly in season. Many of these are treated by having their ovaries removed surgically as they do not often respond to other forms of treatment. The condition is hard to miss when established though it can be easily overlooked in a young animal. It amounts to an unsoundness and is a problem which rightly should be declared before sale.

Gross congenital abnormality of the reproductive system is not common in mares, although problems – such as chronic changes to the uterus – result from repeated breeding and may have an influence on the purchase of an older mare for breeding purposes. Generally, barren mares that are valuable have gained that status from earlier breeding success or

from achievements on the racecourse. Many older mares lose breeding efficiency and it is not uncommon that they should miss a year or more when well into their teens.

The udder is examined for clinical normality, absence from infection or tumours, and no evident signs of mastitis or inability to produce milk. Sarcoids which might interfere with suckling would be treated with caution and could cause the mare to be rejected. Health of the udder is easier to gauge when a mare is lactating.

The Stallion

The stallion is examined for normality of his external sex organs. The testicles, penis and sheath are all examined for signs of infection, injury or growths. Semen may be collected and tested microscopically for health and vitality. The horse may be required to cover a mare to ensure that he is able to. He may also be required to get a mare in foal, this being the ultimate test of fertility.

For breeding purposes, a stallion has to be physically sound and suffering from no condition that might affect his ability to cover. Lameness of a hind limb would affect this, as would injuries to the bony spine and related muscles.

A horse likely to stand as a licensed stallion will have to be free from hereditary diseases, such as roaring, undershot or overshot jaws, cryptorchidism (rig). In this situation, conformation will also be a consideration and conditions such as ringbone, curb and spavin will ultimately affect suitability for the purpose.

The Gelding

Geldings examined for sale purposes must

have evidence that both testicles have in fact been removed. The horse is checked for scars, and the end of the spermatic cord located to ensure that no vital structure, such as the epididymis, has been left in place. Where this happens the horse may be very coltish in nature and actively interested in mares.

It is not uncommon for a rig to have had its only accessible testicle removed, perhaps creating the impression that it is properly castrated. It is also possible that both testicles are retained within the abdomen. In either of these situations the horse would be returnable.

11

Examination After Rest, and Certification

After strenuous exercise the horse is walked to cool off and then returned to the stable, where it is allowed to stand for up to thirty minutes before being taken out again and trotted in hand once more. The purpose of this rest period is to allow for the reappearance of lameness which may have disappeared when the horse warmed up.

The probable cause would be muscular or arthritic conditions which might express themselves at this time. It is also possible that old lamenesses reactivated by the exercise could appear, or conditions which have not fully repaired in the past become newly aggravated by the effort.

In practice, horses seldom show lameness at this point that have not already shown some reason to expect it. However, horses at sales yards are constantly on the move, in and out of their boxes all day, and therefore possibly warmed out of lameness. It would be naive to imagine there are not still vendors who would try to hide such a condition. Many horses with chronic muscular conditions warm up well with continuous walking. However, they would never be passed sound, even then.

The final examination of the heart and respirations may also be made at this time, to check on their return to a resting rate. A horse that blows for an excessive period after exercise is expressing a problem of ventilation. There would normally be

detectable changes in the lungs and, or, vascular system. A heart that is unsound will also show signals of distress at this period. There will certainly be an abnormal rate, though this could be due to dehydration or infection. There may also be disturbances of rhythm and a significant murmur will possibly be more prominent than prior to exercise.

Certification

Once the last stage is over it is time for the certificate to be completed, and this procedure will include a full identification. In the USA there is sometimes a preference for photographs, although this, to be fool-proof, would essentially mean a series of pictures that caught detail, such as whorls, in close-up.

It should be appreciated that current systems of identification used in Europe ensure that any horse is fully identified not only by colour and markings but by whorls and feathering, in particular. Their exact anatomical positions are recorded, together with inherited and acquired markings. Every vet is aware of the onus on him to identify each horse to a standard that will be acceptable in court, and that will distinguish each horse from any other. These markings, when properly recorded, do not allow any leeway for those inclined to dishonesty.

Details of breed, sex, age, height and colour are included.

Description

Horses are described according to breeding and usage.

In the United Kingdom, a Thoroughbred is any horse whose foaling is entitled to be recorded in the *General Stud Book* kept by Weatherbys at Wellingborough.

To be eligible for registration, a horse must be traceable down all lines of its pedigree to those horses registered before 1 January 1980 in the *General Stud Book*. It may alternatively have been included in any of a list of stud books as agreed by the International Stud Book Committee from time to time.

In certain circumstances, also, non-thoroughbred animals can be promoted to Thoroughbred, providing it can be proved that in their pedigree they have eight consecutively recorded crosses with Thoroughbreds (as defined above). They must also show that certain performance criteria are met in their pedigrees.

Most Thoroughbreds are registered as foals and this procedure involves proper identification, including blood-typing. In general, the majority of markings will have been taken by the end of July in the year of foaling, together with blood samples. The blood is placed into containers supplied by Weatherbys, and submitted to the Animal Health Trust at Newmarket. Here the blood type is checked against those of the sire and dam as a parentage check. Providing this test raises no queries, and after the foal registration formalities have been completed, the passport is issued and should accompany the horse from then on.

As adults, Thoroughbred horses are registered by name for racing, or breed-

ing, and this may be done at any time from the yearling stage onwards. The Jockey Club are not in favour of changing names once they are registered.

A passport is issued when registration is complete. This may include such information as the horse's name, its current owner, trainer, identifying markings, breeding, and record of vaccinations. It will also record if a mare or stallion has retired to stud from racing.

This means that a passport will be available against which to identify any Thoroughbred horse being examined for soundness. It is a point which bears special attention as it is not unknown for mistakes, or misrepresentation to occur. Still, the horse being examined will be freshly identified by the vet, whose responsibility is only to examine the animal presented. False identity is a matter between buyer and vendor.

Pedigree

The names of both parents, including country code suffixes of sire and dam are entered on the marking form for Thoroughbreds. The suffixes only apply in the case of foreign-bred animals, e.g. FR for France, IRE for Ireland, USA for the United States of America, etc.

Non-thoroughbreds

For other breeds of horse, details are obtained from the owner of any pedigree document relating to the horse, and recorded directly onto the appropriate part of the certificate. This may include a registered breed number.

In cases where there is no breeding record, details are often dependent on the word of the vendor, making it even more

important that identification is indisputable. Branding marks, when present, are always recorded.

Hunter types for showing purposes can be described as follows:

Heavyweight

Capable of carrying 89 kg (14 st) or over

Middleweight

Capable of carrying between 79.5 kg (12 st 7 lb) and 89 kg (14 st)

Lightweight

Capable of carrying up to 79.5 kg (12 st 7 lb)

Working hunter

Light: up to 82 kg (13 st). Heavy: over 82 kg (13 st)

Small hunter

Ladies hunter

There are many varieties of hunter, e.g. half-bred – by a Thoroughbred stallion out of a hunter mare. This animal will be expected to show some of the qualities of the Thoroughbred. It may also be by a non-thoroughbred stallion out of a Thoroughbred mare, where the offspring will be expected to show particular qualities of its sire. The cross may be with a light draught, such as the Irish Draught, or with a Hanoverian or other heavy type. The purpose of breeding this way is to bring new qualities to the offspring, a process which may be followed through a number of generations. Often the best quality hunters are three or four moves away from the original cross.

Less well-bred hunters are described accordingly, by weight-carrying capacity, shape, and usage.

Point-to-pointers are in most cases Thoroughbred, although any animal registered in Weatherby's *Non-Thoroughbred Register* is eligible to race in point-to-points and under Jockey Club rules.

Three-day-event horses are very often Thoroughbred, but the description must fit the ability and scope of the animal to compete at the level for which it is being sold. This goes for any description being given about a horse put up for sale, and the law does not allow for misrepresentation.

Dressage horses are essentially animals that are able to move and extend well at walk, trot and canter. They must also be temperamentally suited to the discipline involved. A good-looking horse that performs well in this discipline is therefore a very elegant animal indeed.

Show-jumpers are of all sizes, shapes and breeding, the only stipulation being that they are suitable for the purpose described. However, if the animal is a Thoroughbred, half-bred, Arab, Connemara, etc., this information is of particular interest to the buyer and should be stated.

Team chasers are as varied in type as the last category, but must be able to compete at the level for which they are sold. In other words, descriptions have to be accurate and a novice cannot be presented as a mature or experienced animal.

If it does not fit its description any horse would be returnable in law.

Horses and ponies described as ready for driving must have been broken to harness and, again, fit the purpose for which they are designated.

Today a hack is a lightweight quality animal, perhaps even in the *General Stud Book*, with good action and measuring about 15 hh to 15.3 hh.

A cob may be a heavyweight or lightweight, thick-set, closely-coupled animal. In the past the term referred to a short-tailed animal but docking is illegal now.

A child's pony may be of any breed, which should be stated, e.g. Welsh – with grade recorded – Shetland, Dartmoor, Exmoor, Connemara, etc. Height, which has to be exact, is critical in the sale of ponies, especially because the purchaser

will wish the pony to suit a child of a particular size and age, and will want to compete, perhaps, in classes under the given height.

Colour

These are given as black, brown, bay, bay brown, chesnut, grey and roan for Thoroughbred horses. The colour roan is seldom a true colour in Thoroughbreds, as there is often a mixture of grey and chesnut, or white hairs running through the body coats of chesnuts and bays.

Sometimes foal colours are not very well defined. Double colour descriptions such as 'chesnut or grey' are accepted at this stage. Where there is doubt about a foal's colour, the muzzle and eyelids are examined for further guidance.

For non-thoroughbred animals additional colours given are piebald, skewbald, cream, yellow or blue dun, and blue, bay, red, strawberry or chesnut roan. Odd-coloured defines a situation where there are more than two colours in the body coat. There is also palomino, which is a distinct gold colour combined with white mane and tail, and appaloosian, which is not a defined colour but a body pattern of colours as defined by the breed society.

Sex

Described as colt, filly, gelding, horse or mare, sex is defined as follows:

1. A stallion is a male horse at stud.
2. A gelding is a male horse that has been gelded or otherwise unsexed.
3. A colt is a male horse up to the end of its fourth year that is not a stallion or gelding.
4. A horse is a male horse of five years and older that is not a stallion.
5. The term rig or cryptorchid describes a

male horse in which one or both testicles have not descended into the scrotum. It is a condition which will materially affect a sale, clinically rather than descriptively, and any horse suffering from such a problem Should have it declared on presentation for sale.

6. A filly is a female horse up to the end of the fourth year.
7. A mare is any female horse over four years, or a filly that has gone to stud prior to the end of her fourth year.

Age

The age of an animal is that supplied by the owner, where the animal is registered, and is confirmed on inspection of its documentation and teeth.

A Thoroughbred foal becomes a yearling on 1 January of the year after its birth, **even when born in the previous December**. The age of non-registered horses is based on examination of the teeth.

Markings

These are drawn on the marking form area (Figure 11.1) of the certificate and described in narrative. White markings are now hatched and flesh-marks shaded on the drawing. Official marking forms for identification purposes require that at least five identifying marks are noted.

Head

The shape, size and position of any star, stripe, blaze, white face, snip, white muzzle or lip markings are described. Whorls at eye level are described in regard to their

Figure 11.1 The certificate of examination

CERTIFICATE OF VETERINARY EXAMINATION OF A HORSE ON BEHALF OF A PURCHASER				
NAME OF HORSE (OR BREEDING)	BREED OR TYPE	COLOUR	SEX	AGE OR YEAR OF BIRTH
			* BY DENTITION * Delete as appropriate * BY DOCUMENTATION	

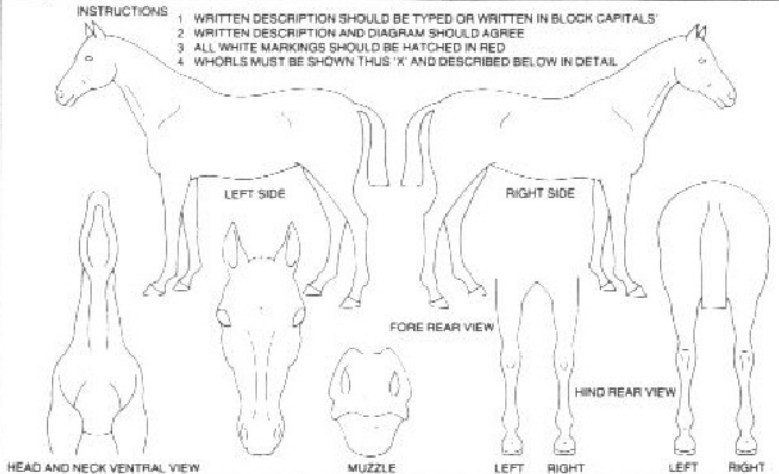
NOTES ON WARRANTY:

If a Purchaser wishes to obtain a warranty covering such matters as height, freedom from vices, temperament, the non-administration of drugs prior to examination, or the animal's existing performance as a hunter, show-jumper, riding pony, eventer etc., he is advised to seek such warranty in writing from the vendor, as these are matters between vendor and purchaser and are not the responsibility of the veterinary surgeon.

N.B. This certificate does not cover an examination for pregnancy.

INSTRUCTIONS

1. WRITTEN DESCRIPTION SHOULD BE TYPED OR WRITTEN IN BLOCK CAPITALS
2. WRITTEN DESCRIPTION AND DIAGRAM SHOULD AGREE
3. ALL WHITE MARKINGS SHOULD BE HATCHED IN RED
4. WHORLS MUST BE SHOWN THUS 'X' AND DESCRIBED BELOW IN DETAIL



IDENTIFICATION:

Head: _____

Neck: _____

Limbs: L.F. _____
 R.F. _____
 L.H. _____
 R.H. _____

Body: _____

Acquired Marks/Brands: _____

REPORT: This is to certify that at the request of (Name & Address) _____

I have examined the horse described above, the property of (Name & Address) _____

AT (Place of Examination) _____ Time and Date of Examination _____

This clinical examination was carried out substantially in accordance with the standard procedure recommended by the RCVS and the BVA (Joint Memorandum on the Examination of Horses 1976 revised 1985). The examination is conducted in five stages as set out below.

I cannot find any trace of clinical signs of disease, injury or physical abnormality other than those here recorded.

Signs of disease or injury and other observations: _____

+ Radiological or specialised techniques included additional to standard procedure _____ Report appended YES / NO +

OPINION: * (a) On this examination I find no trace of clinical signs of disease, injury or physical abnormality likely to affect the animal's usefulness for _____

* (b) In my opinion on this examination the conditions set out above are not likely to affect the animal's usefulness for _____

* (c) In my opinion on this examination this animal is not suitable for purchase for _____

The opinion herein before expressed is based solely on the clinical examination conducted substantially in accordance with the aforesaid procedure and is made and given subject to the qualification that the said animal may be presently subject to some previously administered drug or medicament intended to or having the effect of masking or concealing some disease, injury or physical abnormality which could otherwise presently be clinically discoverable.

Owing to _____

It was not possible to carry out stage(s) _____ of the standard procedure recommended by the RCVS and the BVA (Joint Memorandum on the Examination of Horses 1976 revised 1985). My opinion is therefore subject to my having been able to carry out a partial examination only and I have been unable to ascertain whether any clinical signs of disease, injury or abnormality would have manifested themselves in the course of that part/those parts of the standard procedure which I was unable to carry out.

THE EXAMINATION: Veterinarians have developed a general routine of examination designed to detect clinical signs of disease and injury. The examination is conducted in five stages

1. Preliminary examination
2. Trotting up
3. Strenuous exercise
4. A period of rest
5. The second trot up and foot examination.

All stages should be completed but if this has not been possible it should be made clear on the certificate in what way the examination has been varied and that any opinions are based on this restricted examination.

Approximate age may be determined by dentition or by documentation.

Veterinarian's Name: _____ Address: _____

Signed: _____ Date of Signature: _____

* DELETE AS APPROPRIATE

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 (Revised 1988). This form is approved by the Irish Veterinary Association.

relationship to the eyes as well as to the mid-line of the head (e.g. central whorl at lower eye level). The position of each

whorl is recorded and described in perspective, relating to other markings and anatomical landmarks.

Neck

The position of any whorl is described, including those on the crest, side and underside of the neck. A ventral view is provided for whorls and other markings that occur there. Where there are no crest whorls, this must be stated for Thoroughbred animals.

Limbs

All markings, including hoof markings and whorls are shown. The hoof may be described as pigmented, unpigmented or partly pigmented.

Body

All markings and their position are described. Different coloured hairs are recorded, and all whorls shown and described. Specific spots, patches, zebra marks and lists are shown and recorded in narrative.

Mane and Tail

The presence of differently coloured hairs in mane and tail are specified.

Acquired Marks

All permanent acquired marks such as saddle marks, firing marks, surgical scars, freeze-brands and tattoos are shown.

Congenital Marks

A wall eye, prophet's thumb marks, lop ears, parrot mouth and other dental irregularities are recorded.

As will be appreciated, the presence and

position of whorls is critical in animals with no other identifying marks. These are described as: simple, tufted, linear or crested. Feathering is also described by situation and any whorls it relates to.

There is a booklet available on the subject of description published by the Royal College of Veterinary Surgeons.

Height

The height given must be sustainable, although height is not generally a matter for the vet, unless specified. It is measured in hands allowing approximately 10 cm (4 in) for each hand. In other words, if you advertise your horse as measuring 15.2 hh, under most conditions of sale, the animal would be returnable unless it was very close to the realistic height. Buyers are expected to satisfy themselves on this, but a slight leniency would be allowed, except with ponies which fall under the scope of the Joint Measurement Scheme, and which will have current certificates of height which are binding.

However, it should be pointed out that a horse sold as being 16 hh in a sales ring would, if the buyer insisted, be returnable if found to be less. Many sales companies, though, will not allow frivolous reasons for the return of a horse and include a condition in their catalogue that buyers must satisfy themselves on matters such as height before a horse is sold in the ring. The horse thus described would then not be returnable, even where a buyer failed to see the discrepancy beforehand.

Manners and Temperament

While it may not always be part of a veterinary examination for soundness to comment on the temperament of a horse,

when this might adversely affect the use for which the animal is being bought it can be a significant factor. A pony being sold as safe for a child to ride will not be passed if it shows that it is clearly unsafe and bad-tempered. Likewise, there are horses which show themselves to be dangerous during the course of an examination. This fact will be pointed out to the buyer and the outcome of the sale will depend on it.

It is worth remembering that a child injured on a pony which was patently unsuitable by temperament may have a claim against the vendor if it could be shown that there was knowledge of the fact before selling.

Action

It is not normally the function of a vet to describe faults of action unless these are likely to lead to unsoundness at a later date. The buyer is in a position to judge on them anyway and would be expected to have the elementary knowledge required to see such conformation when a horse is bought at a public sale. In private sales, or where animals are being viewed prior to purchase, a vet may express an opinion on action on request.

Dentition

Like all other animals, the horse has two sets of teeth during life; the temporary or milk teeth being replaced by permanent teeth in time. According to their position in the jaw bones, teeth (Figure 11.2) are classified as follows.

1. Incisor teeth: there are six incisors in both lower and upper jaws in both temporary and permanent sets. The wearing surface has a depression in the centre, called the infundibulum, or mark, which disappears gradually with

age. The shape of the incisors varies, being oval at the top and gradually tapering to triangular at the root. These facts are particularly important in ageing, especially as the angle at which they meet changes significantly with time.

2. Molars: there are six permanent molars on each side of both jaws, making 24 in all. These are divided into three premolars and three molars. The latter are absent from the temporary teeth. The molars are large teeth with rough wearing surfaces and are responsible for grinding food. The permanent molars appear at 9-12 months for the first, 2 years for the second and 3 1/2-4 years for the third.
3. Canine teeth, or tushes: there is one in each interdental space, top and bottom, between the incisors and molars. They are usually only seen in the male, but can occur in the female. The lower pair are situated in front of the upper.
4. Wolf teeth: these are two in number and appear just in front of the first

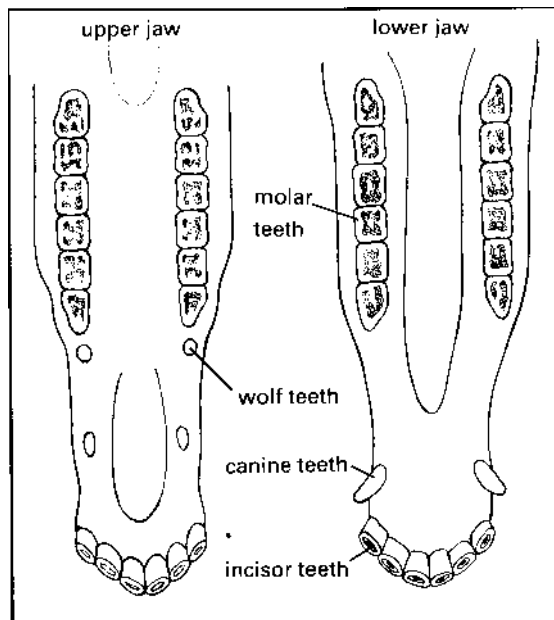
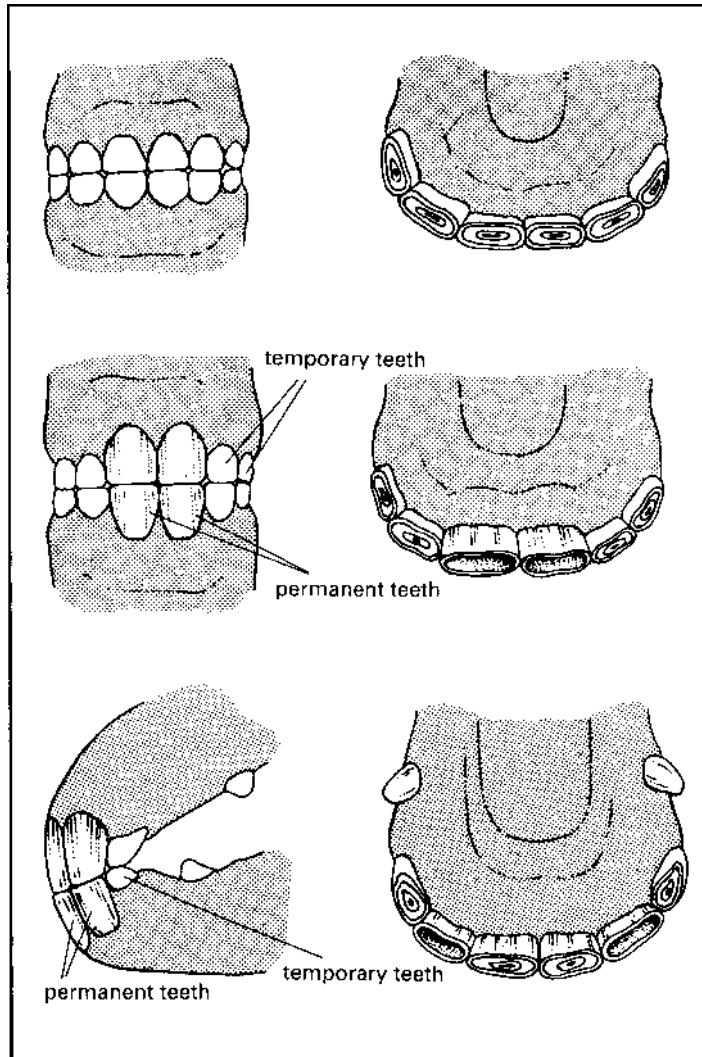


Figure 11.2 The horse's teeth

Figure 11.3 Stages in teeth development: (top) two-year-old, all teeth are temporary; (centre) three-year-old; (bottom) four-year-old



molar of the upper jaw only. They are smaller than any other teeth and vary in size from little more than a pinhead to almost as big as a canine tooth. Because of their small size and shallow roots, some are moved by the pressure of a bit. This creates pain and may cause the animal to throw its head about when ridden. Wolf teeth are generally removed as soon as they appear, although it is not uncommon for the tooth to be broken in the process and for splinters of root to be left

embedded in the gum. The most common cause of this is an inexperienced individual removing the tooth, or the use of improper equipment. These splinters are extremely painful and will cause a ridden horse great problems in coping with the bit.

For the purpose of ageing (Figures 11.3 to 11.6), most information is provided by the incisors which will make clear the difference between milk and permanent teeth. Up to five years of age the casting of

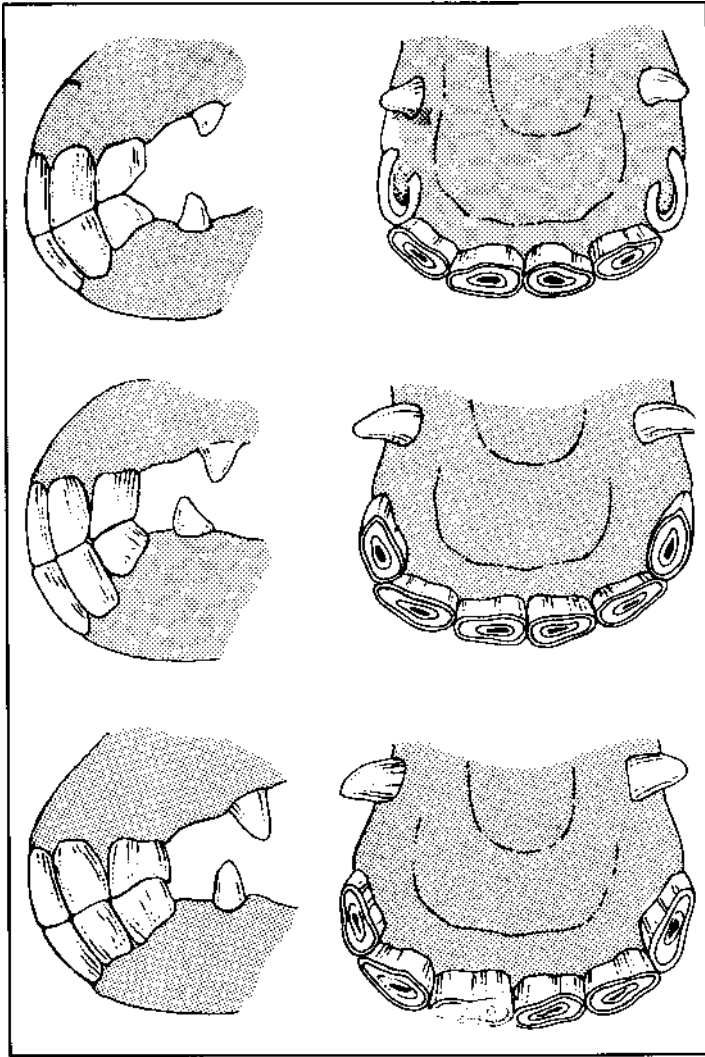


Figure 11.4 Stages in teeth development: (top) five-year-old; (centre) six-year-old; (bottom) seven-year-old

the milk teeth and their replacement by permanent teeth varies very little from animal to animal. After five, however, when all the incisors are permanent, it is necessary to rely on other signs, i.e. angles, shape, marks, etc., to determine age with success. These signs are not as accurate as the arrival of new teeth, but taken together, there should be no real difficulty in estimating the age of most horses to within a year or two.

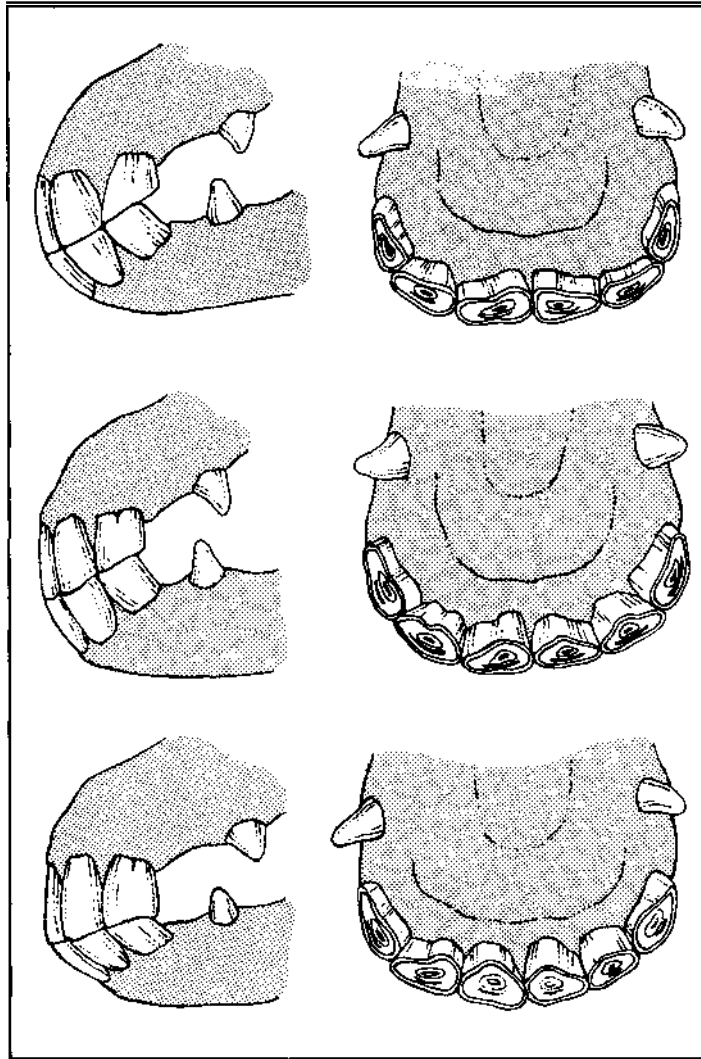
After six to eight years, the accuracy of ageing by dentition is significantly

reduced. For this reason, opinions expressed for older horses without documented proof of age are only an estimate and not binding on the vet.

The pattern of tooth change is as described below:

1. A 2-year-old shows a full mouth of temporary incisors – six on both the top and bottom jaw. Owing to their whiteness and shape there should be no difficulty in differentiating them from permanent teeth.
2. At 2½ to 3 years, the central pair of

Figure 11.5 Stages in teeth development: (top) eight-year-old; (centre) nine-year-old; (bottom) ten-year-old



milk incisors are replaced by permanent teeth.

3. At 3 1/2 to 4 years, the lateral pair of milk teeth are replaced by permanent teeth.
4. At 4 1/2 to 5 years, the corner pair of milk teeth are replaced by permanent teeth.
5. At 5 years, the corner incisors are not meeting fully, and are described as 'shelly'.

The horse now has a full mouth of perma-

nent teeth and other signs must be taken into consideration from here on.

6. At 6 years, the corner teeth have worn level. The horse now has the tables of all incisors level and in wear.

From this point on, the shape of the teeth, the wear of the infundibula – the cups or marks – and the presence of Galvayne's groove are taken into account. Also very important is the angle at which the incisors meet. However, there is considerable

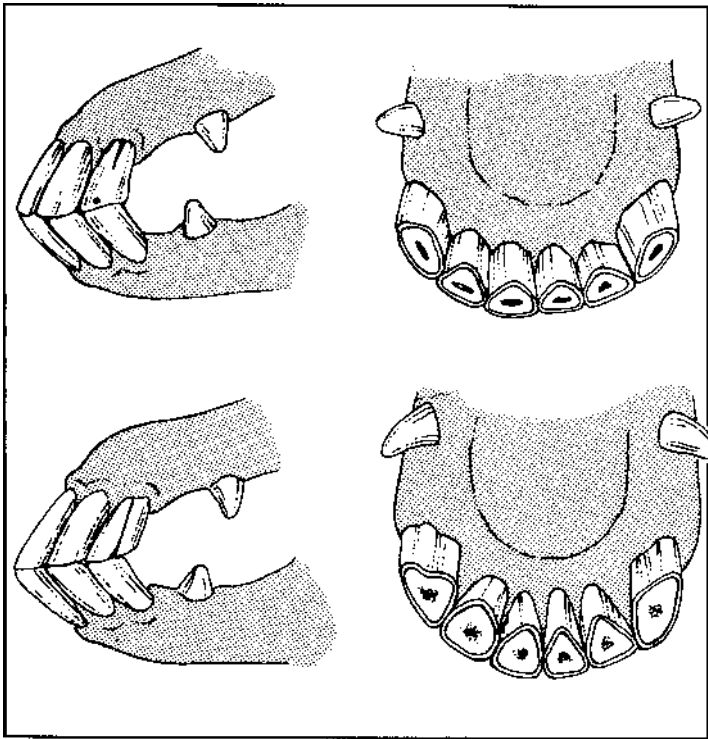


Figure 11.6 Stages in teeth development; (top) fifteen-year-old; (bottom) twenty-year-old

individual variation and these landmarks are just a guide to a horse's age.

7. At 7 years, the cup in the table of the central incisors has often grown out but the outline remains. A hook is seen at the back of the upper corner incisor due to it not fully meeting its opposite number in the lower jaw.
8. At 8 years, the cup has worn out from the laterals but the outline remains. Between the outline of the cup and the front of the tooth a further mark now appears in the form of a dark line, known as the dental star. It is seen in the centrals at this age. The 7-year-old hook has worn away.
9. At 9 years, the cups disappear from all the incisors, but the outline will be evident at the corners. The dental star is distinct on the laterals. About now,

- or later, a second hook develops on the corner tooth. Unlike the 7-year-old hook, this is the direct effect of wear.
10. At 10 years, the cups have gone and the dental star is distinct on all incisors. The shape of the teeth now changes, the tables becoming more triangular with age.

An important sign to assist ageing appears in the upper corner incisors at 9 to 10 years. The dark groove called Galvayne's groove is on the outer surface of the tooth and commences at the gum. By 15 years, it has reached half way down the tooth and by 20 years it extends the whole length.

As well as observing the dental stars appearing in place of the cups, and the length of Galvayne's groove, the length of the teeth and their angle to the jaw is helpful in determining age.

To summarise, a typical mouth develops as follows.

- 1-year-old: 6 white teeth in both jaws showing the typical neck of a milk tooth. The corner teeth are not in full wear. There are three premolars in each side of each jaw. The first molar will also be present.
- 2-year-old: The same but with the corners in wear. The second molar should be present.
- 3-year-old: 2 central permanents in wear and four milk teeth outside them on each row.
- 4-year-old: 2 central permanent teeth and one lateral on each side of them, on each row. The third molar should now be present.
- 5-year-old: A full mouth of permanent teeth, the corner incisors not in full wear.
- 6-year-old: A full mouth with all in wear, cups visible on all.
- 7-year-old: A full mouth, no cups in centrals, hook on outside of upper corner incisor.
- 8-year-old: A full mouth, no cups on centrals or laterals, but a small dark area appears on the tables of the centrals in place of the cups, and the hook on the upper incisor disappears.
- 9-year-old: A full mouth, the centrals changing from oval to triangular. Galvayne's groove on upper corner incisor, dark spot on the tables of the centrals and laterals. A 9-year-old hook on the upper corner tooth may have appeared, though this does not always appear before 11.
- 10-year-old: A full mouth, dark spot on all lower incisors, centrals and laterals becoming more triangular, Galvayne's groove about 6 mm ($\frac{1}{4}$ in) long, lower and upper incisors starting to slope forward.
- 11-year-old: A full mouth, all incisors assuming a triangular shape, Galvayne's groove about 6 mm ($\frac{1}{4}$ in) to 18 mm

($\frac{3}{4}$ in) long. Hook on corner teeth sometimes appears here.

- | | |
|--|--|
| 12-year-old:
13-year-old:
14-year-old:
15-year-old: | Incisors triangular in shape, slope increasing, Galvayne's groove about half way down
growing by about 3 mm
($\frac{1}{8}$ in) each year |
|--|--|

The Certificate

The issuing of a certificate follows the procedure recommended by the Royal College of Veterinary Surgeons and the British Veterinary Association.

First, the horse is identified, describing its name, colour, breed, sex and age. Then a sketch of the animal is filled in using red hatching for white markings and ensuring adequate identification of the animal in case of future dispute. The description is completed in writing and it is critical that the sketch and the written description agree.

The certificate records the name and address of the prospective buyer, and vendor, and the place and time of examination.

All signs of abnormality are recorded and comments made relating to the animal and the examination. If it were not possible to complete the strenuous exercise, for example, this would have to be stated in writing. The report is seldom extensive, simply declaring significant findings. It can happen, however, that a horse may have an old tendon injury, or a heart murmur, or superficial eye lesion which the vet considers not likely to interfere with the animal's use for which it is being bought. It would be essential that these findings be recorded together with any specific comments regarding the significance of the findings.

Reports or records of any specialised examinations such as radiology, electrocardiography, etc., are appended to the

Examination for: Name: _____ Phone: _____
 Address: _____ Date: _____

Place of examination: _____

Identification: Breed _____ Sex _____ Age _____
 Color _____ Name _____

Intended Use: _____

Findings:	Normal	Abnormal
Eyes _____	_____	_____
Heart _____	_____	_____
Respiratory _____	_____	_____
Integument _____	_____	_____
Dental/Digestive _____	_____	_____
Nervous System _____	_____	_____
Musculo Skeletal _____	_____	_____
Temperature _____	_____	_____

L. F. _____

R. F. _____

L. H. _____

R. H. _____

Special Procedures:

_____ Flexion Tests

_____ Endoscopy

_____ Radiography

_____ Rectal Examination

Reproductive Examination: _____

Miscellaneous: _____

Laboratory Studies:

CBC _____ Fecal _____ EIA _____ Culture _____ Other _____

THIS IS TO CERTIFY THAT A CLINICAL EXAMINATION OF THE ABOVE ANIMAL HAS BEEN CONDUCTED, AND THAT IN MY OPINION, AT THE TIME OF THE EXAMINATION; SAID ANIMAL WAS (SOUND, UNSOUND) FOR THE INTENDED USE AS STATED ABOVE. NO WARRANTY OF FUTURE SOUNDNESS IS EXPRESSED OR IMPLIED. TESTS WERE NOT CONDUCTED FOR THE PRESENCE OF ANALGESIC MEDICATION.

Signed: _____

Figure 11.7 A form of soundness certificate currently in use in the USA

certificate, together with any opinion as to their significance.

The opinion provided is then qualified with regard to the future use of the horse in question. Thus, a horse considered suitable for racing or eventing would have to be sound for that purpose and no allowance would be made for any clinical condition which might limit it. However, the horse may have been operated on for its wind, and this might well be accepted by the buyer. Very often, horses for sale on the basis of form, achieved despite the wind operation, will be bought in full knowledge of its existence. In such a case, the vet may be instructed to ignore this fact and look for any other defects. Formerly, the certificate would have declared the horse had been operated on for its wind but was otherwise sound. Now, the defect would be mentioned on the certificate and the fact reported that no other condition was found to limit its usefulness for the intended purpose.

It should always be remembered, however, that the horse in question might be so adversely affected by a declared defect as to limit its future use. In such a case, it would be made clear that this was so and that purchase was the buyer's gamble, in other words, the vet advises against purchase on those grounds. In all probability, there would be no certificate issued.

I once vetted a horse with an enlarged hock, for a buyer I did not meet. My instruction was to ignore the hock and examine the horse for any other defects. What I did not appreciate was that the vendor had not seen the animal himself, though an agent had. When the horse arrived at its new home, the new owner did not like the hock. There was a dispute, but the buyer was obliged to keep the animal.

A similar situation might arise when a horse has a suspect tendon, which had not stopped it from winning a recent race. The buyer might take the vendor's word that the animal would remain sound, even though the vet's opinion was against it. If the animal then broke down, the risk is the buyer's and there is unlikely to be any redress. However, if the animal in question had breeding potential, all might not be lost.

In the USA, where a different certificate (Figure 11.7) is used, it is not advised to recommend a horse for future use for a specific purpose, it being felt that this is a matter for the buyer to decide. A list is given of the disease conditions and other blemishes found and no opinion on suitability for a particular use.

Written Warranties

If a buyer wants a warranty regarding matters such as height, vices, temperament, performance ability, present drug status of the horse, it is advisable to get this directly in writing from the vendor, as these matters are not in the domain of the vet.

It may be decided, anyway, to take two blood samples for future drug analysis. One of these is presented to the vendor. The second sample is held by the vet in case any dispute should arise.

The animal will now be certified either suitable or unsuitable for the purpose for which it is being bought. The standard certificate does not include examination for pregnancy, and, if required, this is dealt with separately.

12

The Variety of Horses Examined

Many varieties of horse are seen, distinguished by age, type and use. A broad range of these will be dealt with in this chapter.

Examination of Foals

Most commonly, examination of foals is carried out on behalf of intended buyers at sales; in the case of Thoroughbreds generally before the animal has entered the ring. Of course, foals are also examined after purchase, but, where large sums of money are to be spent, prospective buyers often like to approach the animal in the bidding with prior knowledge of conformation and soundness, as well as the breeding which will have attracted them in the first place. This applies, mainly, to foals which have prospective racing careers, or exceptional value on the grounds of breeding.

People buying foals of any type generally do so for a reason and usually are more demanding in regard to conformation and size than, perhaps, they might be when buying older horses. The reason for this is because horses are sold at a premium for good conformation. While poorly-made foals (Figure 12.1) may well improve in looks, the reverse is less common; buyers believe that their investment has its best chance of success if they start out with a quality product.

At Thoroughbred sales, it may happen that an expert on horse conformation and movement – who is not a veterinary surgeon – will see an animal first on behalf of a purchasing agent or the buyer. The vet may then be asked to carry out an examination – which is necessarily limited in nature – in order to assure the buyer on soundness.

The foal will be examined first in its box, making sure it is the correct animal as detailed in the catalogue. The heart, lungs and eyes are examined specifically at this point, and a hand is generally run over the limbs while the foal is still in the stable,

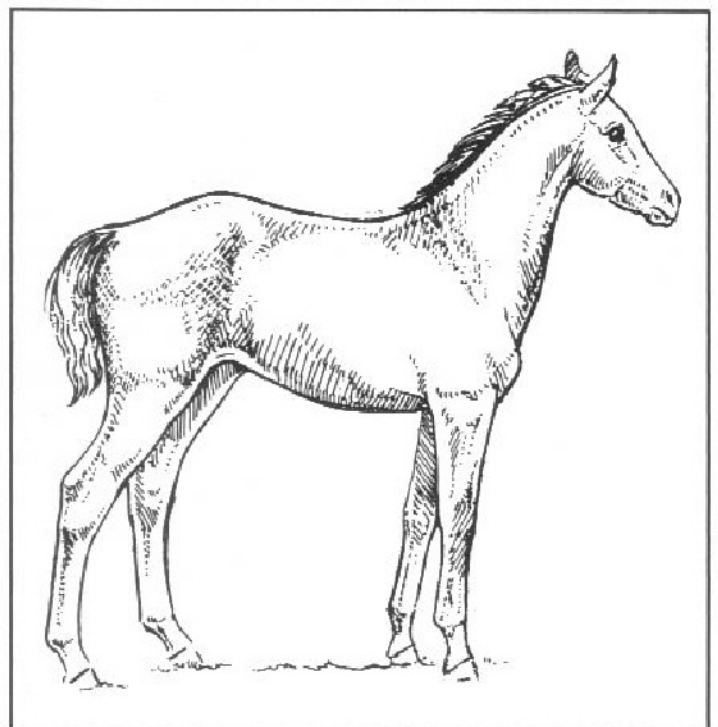


Figure 12.1 *Over-straight foreleg of a foal*

because not all foals are obedient enough to be handled in an open space.

If it is a colt, the scrotum will be examined to ensure the presence of both testicles. While they may not be fully descended, both testicles should be capable of being handled. If one is missing, this might be of vital importance to a buyer, although conditions of sale generally do not allow a rig colt to be rejected after sale unless the animal is beyond July of its yearling year. Any sign of existing hernia (umbilical or inguinal) would eliminate the foal at this stage.

The foal is then taken outside and viewed standing on level ground, with every detail being gauged as before. If any blemish is seen, it may conclude the examination immediately, because the examiner will necessarily reject any conformational defect that might lead to lameness, or that might affect the future saleability of the foal – perhaps at a yearling sale, if the buyer is a pin-hooker (buying for resale as a yearling). Particular conformation that will affect the decision at this point will be as follows.

1. If the foal has an under- or overshot jaw its value for breeding may subsequently be reduced. While an allowance may be made in the case of an exceptional animal, the degree of variation may have to be recorded and a decision made in the light of fact, involving discussion with the potential buyer.

A buyer attempting to buy foals for sale at the top of the yearling market will have to be scrupulous about conformation, movement and soundness. There is no room for doubt in these circumstances, and size and presence are as important as manners and looks.

A Thoroughbred colt will have to be bold and strong, creating an impression of quality, while not being too aggressive. A filly bought to race

will have to show scope in her action as well as having size, and give the impression of elegance and power.

A buyer who is only interested in purchasing foals to race, as opposed to reselling, may accept blemishes such as teeth defects if the foal in question looks exceptional as a racing prospect and has the size, strength and movement of real promise. However, it should be remembered that conformational defects may influence the animal's future sale value for stud purposes, irrespective of racing performance, or could limit potential by causing unsoundness.

Pedigree and breeding are inevitably more critical for highly valued animals likely to have future careers at stud. Very often really exceptional individuals with less fashionable pedigrees prove excellent racehorses.

2. Length and quantity of bone are often measured by tape and animals which are considered too light of bone will generally be rejected because this will influence value for resale. Light-boned animals are certainly less valuable as prospective two-year-old racehorses and are unpopular with trainers.
3. Straightness of limb from the front and lateral views is critical, but without being over-straight. The foal must move straightly and place its feet without any indication of dishing (outward movement) or winding (inward movement).
4. An over-straight pastern/fetlock angle with a straight upright shoulder, as seen from a side view, will limit appeal for racing purposes. Horses that are too straight are less well able to deal with concussion, and are more prone to lameness as two-year-olds in particular.
5. Immature or badly developed knees (Figure 12.2) are a defect, though a



Figure 12.2 A foal with 'open' knees

certain allowance will be made for development. A foal likely to be sold as a yearling will, in all probability, have to be perfect in this regard. There is little room for error in the kind of investment involved, although there are those who will be prepared to take a gamble on improvement, providing the purchase price is suitably adjusted. A foal that is over or back at the knee would not be a good purchase.

6. Very round or over-sized fetlocks receive a similar judgement.
7. Poorly made hocks which appear bent from the side view or which are badly out of line from the rear are rejected.
8. Colour may militate against a foal; for example a very flashy chesnut might be popular. Some people do not like greys, because of the prospect of skin problems in age.
9. Sex may be a deciding factor because some families are more successful on the female side, or vice versa. Colts are generally more valuable and some buyers prefer one sex to another.
10. Height will also be a deciding factor, because any impression that a foal will not grow big enough will eliminate it for purchase. An allowance will of course be made for late foaling dates.

The foal is then walked and trotted (Figure 12.3), if conditions allow, and judgements are made on the basis of action and movement. An individual that shows itself off well and creates the hope of future racing ability will sell at a greater premium than one that does not. While the clinical opinion will not include this kind of information, the prospective buyer will be looking for informed guidance on precisely this ground. The vet may well be asked, informally, what he thinks about the foal.

The foal is turned sharply and backed, if willing, in the same way as an older animal. It must give every indication of health and normality in order to be recommended for purchase.

Non-thoroughbred Foals

In the case of non-thoroughbreds, the examination will follow the same lines, with the foal being walked and trotted at the request of the examiner. If the foal has not been handled adequately prior to presentation for sale, then the capacity to manually examine limbs, etc., may be limited. Most young healthy animals, however, allow adequate inspection, and will be handled if the need arises. If not, they may well be rejected; it is the obligation of the vendor to ensure a foal is presented for sale in a fit condition for would-be buyers to inspect it.

It has to be appreciated that these examinations are simply carried out at the request of an individual and do not involve the issuing of a certificate. They also require the permission of the vendor before they can take place.

Yearlings

The main difference between yearling

Figure 12.3
A hunter foal



Figure 12.4
A hunter yearling



(Figure 12.4) examination today and that of a few years ago is that examination for soundness of laryngeal structures is now a condition at most Flat sales. At these sales, yearlings may be presented with an accompanying current certificate that states they make no abnormal sound on inspiration when being lunged. They are then subject to post-sale examination, including endoscopy where this is deemed necessary. The reason for this is that some expensive yearlings in recent years have been found to suffer from respiratory problems subsequent to sale.

Other than this the examination is the same as for foals. Yearlings at leading sales are examined repeatedly by vets on behalf of potential buyers and then sold as they stand in the ring. Any yearling is returnable if found to suffer from a vice (such as wind-sucking or weaving) or from clinical abnormality (such as a rig or shiverer). However, it is important to realise that conditions of sale are not standard and may vary from one sales company to another. It is critical to read these conditions in order to know the specific limitations applying to any particular purchase.

The private sale of a yearling might be subject to additional testing, e.g. radiography of feet and knees, though this would only be at the request of the buyer or suggestion of the vet, if there were any reason for doubt.

Two-year-olds

The examination of two-year-olds in training, whether for a private or public sale, will involve full veterinary examination. The influences of training will often be represented by limb blemishes, the results of infectious disease, and possible development of wind problems. Special consideration will have to be given to

maturity, and to the reason why an animal is sold at this time. Did it fail to withstand the rigours of training and simply need time to mature? Such an animal might well be sold at a dispersal sale, without any warranty, and might prove a good buy for someone with patience.

Evident causes of disposal are sore shins, splints, or open knees. Some animals may simply have grown too big and may need time to develop. The critical question is of current soundness and future soundness. If the sale is private, it would be common for radiography of feet, cannon bones and knees to be carried out, checking for bony changes or small fractures, which may in fact be healing.

On the other hand, some horses are sold on the basis of their success. But these too will have to be critically assessed as any condition which might limit their future usefulness will be vital to any decision to buy.

It should be appreciated that two-year-old training places a great strain on young horses and many suffer from injuries to developing bone, cartilage and related soft tissue structures. The incidence of these problems in mature horses is far lower. When examining two-year-olds in training, being sold on the basis of performance, radiography may be required to eliminate doubt where any over-lying defect is seen.

Examination of the respiratory system will include ridden exercise at a pace specified by the vet on a gallop. Endoscopy may also be required to investigate the condition of the internal respiratory structures.

Fillies may be retired unsound from the racecourse with injuries which prevent future use. They may then be examined for breeding purposes, the examination being confined to the development of their reproductive organs – principally the ovaries, uterus and vagina.

If sold at a dispersal sale, unwarranted,

the probability is that a two-year-old was too slow, immature, unsound or temperamentally unsuited to racing. Generally, the cause will be detected on examination, but no such horse should be bought on speculation without appreciating the element of gamble involved. Nevertheless, many, given time and grass, will mature into perfectly sound individuals for future active use.

Three-year-olds

Horses that have raced on the Flat are commonly dispersed at the end of their three-year-old careers; only exceptional animals are kept on to race at four years, or, sometimes, valuable horses which have failed to prove expected ability through lameness, illness or immaturity.

Many horses sold at sales out of training yards will have a blemish or problem which is likely to affect a future racing career. However, blemished fillies with good basic conformation and pedigrees will have value for breeding purposes. With geldings, on the other hand, the significance of tendon injuries, bad action and traces of chronic respiratory disease all have to be taken into account.

Many such animals are sold as they stand, and are not returnable unless covered by warranty, or as stated under conditions of sale. The buyer must be on guard. Sometimes the wording of catalogue descriptions can help to hide evidence of unsoundness or create a false impression that an animal is covered by warranty when it is not. A horse described as 'likely to make a good chaser when given time to mature' is not a warranty. Furthermore, verbal assurances of soundness are unlikely to be binding unless witnessed. So take care, otherwise you may get lumbered with an animal you do not want or one which will not want to race!

Remember, the number of reasons why horses are unsuited to racing are legion, and they cannot all be put down to the unsuitability of life in a training yard.

Pre-sale Vetting

Young unbroken horses for National Hunt racing are now subject to pre-sale vetting in many cases.

This involves, first, an examination at home on behalf of the vendor before the horse ever gets to the sales yard. The animal is then examined a second time by the sales company's panel of vets; this examination is usually the liability of the buyer, depending on conditions of sale. No examination of horses is allowed after the hammer falls, although any buyer is free to have a horse examined by a vet of his choice before sale, with the exception of wind examination (because it would be impractical), as long as the vendor agrees.

From the buyer's point of view, the purchase of an animal after considerable time and thought, only to find it spun by the vets, is a waste. The biggest problem in the past arose with horses unsound of wind, as these had been untried and were otherwise relatively sound, unblemished, and grown well into their frames.

Pre-sales examinations helped to solve this dilemma and to weed out the good from the less valuable.

National Hunt Racehorses

Young National Hunt racehorses are sold, or discarded, depending on soundness, future potential or past success. Animals sold as winners will have, generally, the external impression of soundness, but the possibility always exists that there is an

underlying problem which will limit future performance. On the other hand, discards may have potential in different circumstances.

With these horses, particular attention needs to be given to skeletal soundness, wind, the integrity of the muscular system and bony skeleton, especially the spine, and on signs of wear and tear on the central nervous system, e.g. stringhalt and shivering.

Older National Hunt horses suffer from a high incidence of back problems, resulting from jumping, and these are reflected in their action, and in the anatomical structure of the spine, pelvis and related muscles. Unsoundness of wind also increases with age, as do allergic and infectious diseases of the respiratory system. Heart murmurs will invariably be more common in older horses, but might reflect chronic lung problems, which would be serious. They may also result from recent viral disease and may disappear in time.

While bleeders are not declared in Europe, there is no harm in a buyer enquiring about this problem and seeking a written assurance from the vendor that a horse has not, and does not, break blood vessels. If done properly, involving a written or witnessed statement, this would amount to a warranty.

Mares

The examination of mares for purchase as breeding animals may well involve special examination of the reproductive organs.

If in foal, a simple manual examination to confirm pregnancy may be all that is required. However, where a mare is being exported, a certificate declaring freedom from Contagious Equine Metritis (CEM) or other venereal diseases may be required. Tests, such as the Coggins test for Equine

Infectious Anaemia (EIA), may be required by the authorities of the importing country, and these can vary depending on the incidence of disease in the country of origin, or internationally, at the time of export.

In the case of barren mares, the situation is much the same. Certification for freedom from CEM may be a condition of sale and swabs may have to be taken and cultured at a registered laboratory in advance.

At some sales in the USA, mares are sold with certificates stating they are in foal, or, alternatively, fit for breeding purposes. Re-examination is allowed after sale and the mare is returnable if not found to be as declared on her certificate – this possibly being subject to a third opinion. Generally, such conditions in British and Irish sales apply only to certification for pregnancy.

With private sales, there is time for greater care and full examination of the reproductive system will usually be allowed. Mares may be examined for soundness of eye, heart and lungs, or any other hereditary or physical defect which might curtail normal expectancy as a broodmare. Of course, this latter examination would also be possible in a sale yard.

Stallions

Examination of stallions for their ability to breed will be in line with the procedures recommended earlier. General soundness will also include detection of infectious or hereditary diseases, as well as any condition which might affect the future usefulness of the animal as a stallion.

Show-jumpers

The examination of show-jumpers is pri-

marily concerned with the animal's ability to jump and compete. In this special situation a buyer may note but discount advice regarding heart murmurs or wind infirmities as long as they do not limit the horse's ability to compete at the level of performance expected. This may also make allowance for minor eye deficiencies, or faults of conformation or blemishes to limbs which might otherwise prevent a sale, as long as the horse can jump successfully and will continue to do so for a normal foreseeable length of time.

This inevitably means a greater degree of consultation between vet and buyer as to the significance of conditions found and their likely effect on future performance. Lameness would generally tend to be a limiting factor, unless this could be treated with success.

As a general principle, the right person to effect the cure of a lame horse is the vendor. Anyone buying in the hope that an evident condition can be cured will not get a warranty on it as a rule (and will not get a veterinary certificate). It then becomes a gamble; if it fails, the animal may be worthless. However, there are people who buy in these circumstances, and the purchase price should reflect the gambling element. On the other hand, if the particular problem does not affect jumping, the horse may prove worth buying. Wind infirmities have far less influence on horses that are not racing. But a jumper (Figure 12.5) must have forelimbs to land on, hindlimbs to jump from and a back that is not causing pain every time it takes a stride.

Eventers

Event horses (Figure 12.6) need to be very sound to complete the cross-country sections of their competitions. Generally, wind problems are considerably more sig-

nificant than with horses which are only showjumping, although an eventer can compete successfully with lung problems which would limit racing performance. This is because racing makes a maximal demand on the respiratory system whereas eventing usually does not.

Unsoundness of limb is as significant as with racehorses, and tendon injuries are common in this category. Their presence has to be considered with extreme caution, though the same principles apply as described earlier.

Dressage Horses

For dressage competition a horse should have the ability to move well at walk, trot and canter and also have the temperament to take the discipline involved. Generally, an individual buying for this purpose will have to be aware of the qualities required because a vet is unlikely to be able to say that a young untried horse is going to compete at dressage.

The soundness certificate will state that the animal is sound and suitable for the purpose for which it is being bought. That does not mean it will be able to enter or win competitions.

When examining any potential or mature dressage horse, action and movement are critical. Any arthritic or muscular condition that influences movement or limits extension would not be tolerated. Conditions of the feet would also be of special importance.

Point-to-Pointers

These are very often retired racehorses with all the blemishes that go with age. Few prospective point-to-pointers will be seen without some form of blemish,



Figure 12.5
A mature jumping type



Figure 12.6
An eventer in action

though it is surprising how many continue to give prolonged service. The most common problems met are chronic lung disease, old tendon injuries and muscular/skeletal problems associated with the back.

Back problems are a definite defect in horses that jump, and though many of these conditions can be treated effectively, a high percentage of jumping horses need regular manipulation to keep them sound.

Settled tendon injuries may never affect a horse again, but there is always the risk. A great deal depends on the training regime and how the dynamics of leg movement are affected by the injury. Horses with damaged tendons are helped greatly by a system that brings them in to

work early, and involves regular hunting for several months before fast work is embarked on. By getting them fit slowly, leg strength and suppleness is fostered, as opposed to shorter training periods where horses race before they are fully fit.

Chronic lung disease can often be managed, once recognised, though current fashions in stabling do not favour horses in getting rid of infections, and staying free of them through a training period.

Show Horses

Young horses bought for showing purposes (Figure 12.7) must be without



Figure 12.7 A show horse must be without blemish

blemish to fit their 'show' description. Where any blemish is present it would properly be declared and will very likely affect the value of the animal.

Mature horses will also be sound. However, where they are being sold on the basis of success they may well bear blemishes such as splints, capped hocks, etc., which have not prevented them from winning their classes. However, these horses must be sound in eye, heart, wind and action.

Young and Unbroken Riding Horses

The same applies to these as to young unbroken store horses for racing. If being bought privately, they should be vetted on behalf of the buyer by a vet who is not familiar with the horse and should always be subject to soundness of wind. Many three- and four-year-old unbroken horses will have suffered injury of one kind or another in the field and the influences of such injuries should be decided on, perhaps requiring radiographs to help decipher underlying damage.

Ridden

Any ridden horse (Figure 12.8) is vetted fully with resort to special procedures where these are thought necessary. Temperament and suitability for the purpose declared are critical, as is the correctness of description and warranties. Always read conditions of sale carefully, especially at small country sales, and find out if your intended purchase has been vetted prior to sale, or if you have the right to have it re-examined later.

Be certain to know if you are buying a horse 'as it stands', with no comeback against the seller if the horse is unsound.

Ponies

Pony sales generally provide the same rights as sales of bigger horses. Make sure you know the conditions and where you stand with any purchase. While ponies (Figure 12.9), generally, tend to be sound more often than horses, remember that they suffer from all the same conditions, with very few exceptions.

Just as much care needs to be taken, however, when purchasing a pony. Be careful about height where this is critical to the use you intend for the animal. A good temperament is also vitally important and the pony must be suitable for your child.

Virtually all reputable sales work on the basis of ponies being subject to examination for soundness, or warranted, and being returnable if not fitting their description for manners, height, age, etc.

Driving Horses

Horses driven for pleasure (Figure 12.10) should be perfectly sound if intended for use in competition. The demands of long-distance driving competitions are as great as anything other than racing, and a driving pony, besides its conformational requirements, needs good clean lungs, sound limbs and a perfect temperament.

Assurances that the animal is fit for the purpose for which it is being sold are important, as well as that it can compete to the standard required. A beautiful, free-moving pony is no good if it will not settle between shafts.

Maturity and Soundness

The effect of maturity on the soundness of young horses mainly applies to the devel-



Figure 12.8 A showjumper at the start of the course



Figure 12.9 *Children's polo ponies battle it out*



Figure 12.10 *Driving horses at the Royal International Horse Show*

opment of bone and the amount and type of work they are subjected to. Problems are most marked in the fetlocks, shins and knees and may vary from evident enlargements of epiphyses – as in open knees or rounded fetlocks – to bucked shins or old fractures of cannon or pastern.

It is certain that bones subjected to training at two years of age are more likely to be injured or fracture than mature fully developed bone.

Young horses in training often strain joints and ligaments, which, if given time to repair, do so fully.

Trotters

Horses intended for trotting races need to be as sound as racehorses. Action is very important because horses which tend to interfere at faster gaits may cause injuries that limit their future use.

The animal may be examined in harness as well as out and must be sound in eye, heart, wind and limb. The reason for sale is important and it may be advisable to take blood samples for drug detection and/or have written assurances on vices and drugs.

Working Horses

While working horses are uncommon today, they still need to be sound. When horses drew loads in city streets, concussive conditions of the forelimbs were more common than now. Navicular disease, ringbones, sidebones and fetlock prob-

lems were more likely to result from the stresses the limbs were subjected to. Problems with hocks were also more common as the strain imposed by pulling heavy loads up sharp inclines transferred a great deal of work to these joints.

A working horse today will suffer from conditions which reflect the type of work it does. These conditions vary, depending on whether the work is mainly done on roads or in fields.

All concussive lamenesses are significant and signs of any injury to the back or muscular system would limit the animal's ability to work. Any condition of the heart would have particular importance in a horse intended to pull heavy loads.

The Older Animal

Any horse over eight without documented proof of age is capable of being aged only within wider limits than may be acceptable, and the vet's opinion will not be a warranty of age.

Conditions more common with age are concussive diseases, especially relating to the foot. There is a tendency for the sole of the foot to drop, making it more difficult to shoe the horse without the risk of direct pressure to the more delicate structures such as the laminae, pedal and navicular bones. This could be bad enough to effectively end the horse's useful life. Arthritis is also more common with age, increasing the importance of flexion tests as horses get older. Arthritic changes in joints are usually accompanied by external signs, e.g. heat, swelling, etc.

13

Special Examinations

While the routine examination of horses for soundness is carried out under the procedure already described, there may be situations where the use of further specialised equipment is needed, or looked for. This may arise at the request of the buyer or the suggestion of the vet. It will depend on the permission of the vendor before it can take place.

Generally the need for such added information is self-evident. An abnormal foot, or enlarged knee, might be functionally sound at all stages of movement, but the suspicion may exist that there are underlying changes in the bone which will have long term implications. The need to investigate further is obvious. A vet might be unhappy to pass an animal without this help.

However, it must be appreciated that special tests are only an aid to forming an opinion; they are not infallible, nor can they be expected to guarantee future soundness.

Use of such tests must be a balance of good judgement coupled with solid clinical experience.

Radiography

Radiographic examination is done for bony conditions of the lower parts of both fore and hind limbs. The foot is commonly examined, with particular reference to the

pedal and navicular bones. Fetlocks may be examined if there is any heat, swelling or other evident abnormality of the joint, especially in an animal that is functionally sound but required to face up to future competition. Knees and hocks are also radiographed, looking for spurs of bone, small fractures or signs of arthritis. It has to be remembered that pain felt on landing from a jump might cause a horse to stumble or fall and so endanger a rider. This particularly applies to the knee, although it will also apply to other weight-bearing parts of the anatomy; the ability of the hock to bear the work burden imposed on it, especially in performance horses, is also vital. The decision arrived at with regard to lesions found has to be critical, although a determined buyer may decide to take a gamble on soundness, especially if there is proven ability.

This type of examination is more commonly carried out on older horses with more mileage in competition, though there are situations when young horses will be radiographed to eliminate the importance of external gross lesions, e.g. wounds in critical places, injuries involving the foot, etc.

Feet, joints, knees and hocks may be radiographed (Figures 13.1 to 13.4) as a routine part of soundness examination in young horses, when all avenues of future loss have to be minimised, if a great deal of money is being spent.

Having said all this, the interpretation



Figure 13.1 Radiograph of carpus showing slab fracture



Figure 13.2 Radiograph of splint. In this case there is an underlying fracture of the splint bone



Figure 13.3 *In this case the pedal bone has dropped as a result of laminitis. The bone is no longer parallel to the hoof wall*



Figure 13.4 *Fracture of the sesamoid bone seen on radiograph. The animal in question recovered fully*

of radiographs in these circumstances is not a perfect art and the presence of abnormality does not necessarily mean a sound animal is likely to become lame in the future. Take for instance the situation regarding navicular disease. It is well recognised that certain animals show changes in the navicular bone on radiograph and are never lame; and even experts presented with radiographs taken from animals diagnosed as having navicular disease have failed to relate them to the animals in question, or agree as to the significance of the lesions seen. There is no evidence on current knowledge that horses showing evident changes will actually ever develop lameness. And the smaller the horse the less likely is navicular disease to develop, even where changes are evident on radiograph.

The purpose of this statement is to point out that the interpretation of special examinations may eliminate an animal which can still continue to perform soundly. If changes are found in the navicular or pedal bones, the veterinary opinion reached will be affected by it, and will inevitably be against the animal. Many older horses will show early signs of pedal osteitis, and, because of these, will be eliminated forthwith. There might still be several years of competition left in the horse, though the possibility exists that the condition will become significant at some later time. Even when arthritic lesions are found, or bone spurs on a joint such as the knee, it is not always possible to be certain about their influence on movement and experts will differ on their interpretation. Ultimately it may be the buyer who has to decide on whether or not to gamble on the animal. Of course, there are cut and dried situations, where the benefit of the procedure is clearly seen, but not always.

Bone chips on the knee may be successfully treated by surgery today, but this should be the responsibility of the vendor.

If a buyer is accepting an unsound horse, its true value is the same as for any unsound animal, perhaps no more than flesh price, with something added for ability and potential. Therefore the price should take this into account, even where the condition is curable. If the vendor wants full value for an animal it should be presented sound. Unlikely as it may seem, people do buy unsound horses, often in the hope of curing some evident problem.

Endoscopy

The procedure of examining the pharynx and larynx by fiberoptic endoscope is becoming more prevalent at public sales now and is carried out when requested, or thought necessary, in private sales.

More generally, an opinion is given on the soundness of an animal at the time of examination, based on whether or not an inspiratory noise is heard while the horse is being exercised. It is becoming the norm at some sales, however, that an animal making a noise is examined by endoscope and if there is no abnormality seen – conditions here vary between European and USA sales – the horse is passed.

It is always possible that a horse making a noise is suffering from a temporary problem, an infection perhaps, that will pass off. There may be no abnormality seen by endoscope. At a sale the decision will be governed by the conditions of sale, but privately many vets will be unhappy to ignore it unless they find a definite cause. Generally, the horse will not pass on the day and it is the prerogative of the buyer as to whether or not he or she wishes to proceed further. It is not an ideal situation and many horses are rejected which later prove to be sound. However, the presence of an infection could act as an excuse for suspending the examination and resum-

ing at a later date, but this would not be allowed at a public sale.

It is also true that changes seen under endoscopic examination do not always affect performance and do not always become progressive, and many inspiratory noises are transient and may disappear with time, or as the animal gets fit.

Evidence that a horse breaks blood vessels will not normally be detected on routine examination in a sale yard, even using endoscopy. Therefore the instrument has a limited usefulness, and this should be understood. On the whole, sales conditions in the USA are more extensive than those in Europe, especially regarding the status of pharyngeal and laryngeal structures.

However, it must be appreciated that this is a developing situation which, very probably, will be subject to further refinement yet on both sides of the Atlantic.

Diagnostic Ultrasound

The idea of ultrasonic scanning of tendons as an adjunct to soundness examination is presently justified in some situations, or where a buyer wants to purchase a horse with an evident lesion and wishes to assess its prospects for the future. But it should be understood that no horse with evident tendon trouble can ever be passed as sound, though a great many, if properly managed, do fulfil a completely useful further career. If there is heat in the limb on the day of examination the horse is treated as if it were lame. It will not even be trotted in case of causing further injury to itself. Where the tendon is enlarged and cold, a decision is made based on the age, history, action and conformation. If this decision is then favourable, the horse may be bought and hopefully remain sound with the aid of modern physiotherapy and an understanding of the patience needed

to train, and return it to full working soundness. The presence of the injury will normally be reflected in the price. The biggest cause of disappointment with tendons is hurry, or failing to understand the problem in its complexity.

It is possible, because technology is improving so rapidly, that soundness examinations of the future, especially of more valuable horses, will involve specialists and specialist techniques more widely. Thermal-imaging systems for full body scanning might lead to more successful evaluation of heart and lungs and provide simpler methods of bone scrutiny. Inevitably, cost will be a factor, but time has a habit of overcoming that difficulty.

Electrocardiography

Where a horse is found to have a heart murmur, or an irregularity in the pattern of heart sounds, an ECG examination may be called for, to further investigate their significance and to detect evidence of any underlying structural lesion that might explain them.

The procedure is carried out by attaching the animal by means of leads to the electrocardiogram; the electrical patterns of heart contraction are then recorded as a permanent continuous tracing on paper (Figures 13.5 to 13.7).

As murmurs of varying degrees and rhythm irregularities are quite common in older competition animals, their significance in relation to the future of the horse and ability to compete are critical. As stated earlier, the percentage of clinically significant conditions is small, and it is amazing how many horses compete successfully despite heart aberrations when at rest.

An ECG can help considerably with the interpretation of cardiac abnormalities, especially when carried out by an experienced operator.

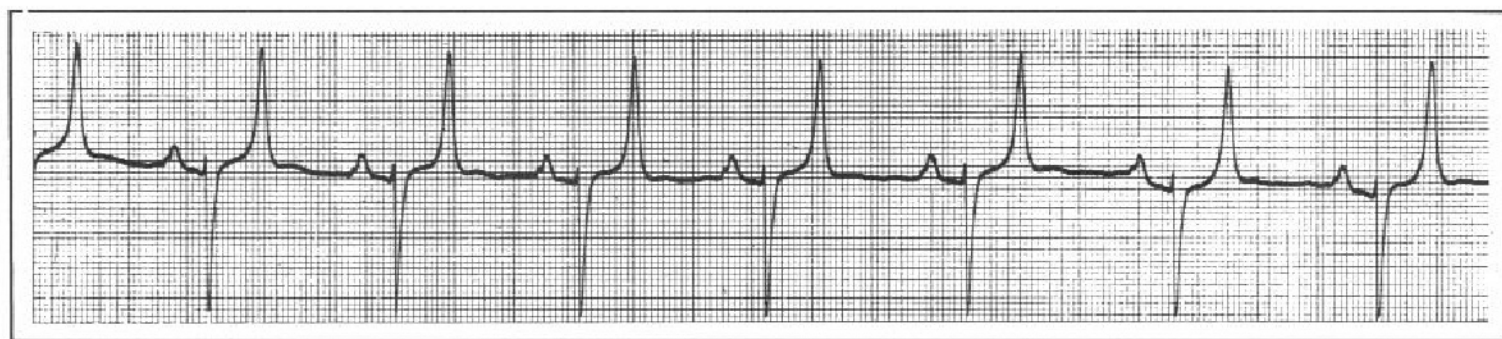


Figure 13.5 Electrocardiograph of a normal five-year-old gelding, with heart rate of 50 cycles per minute

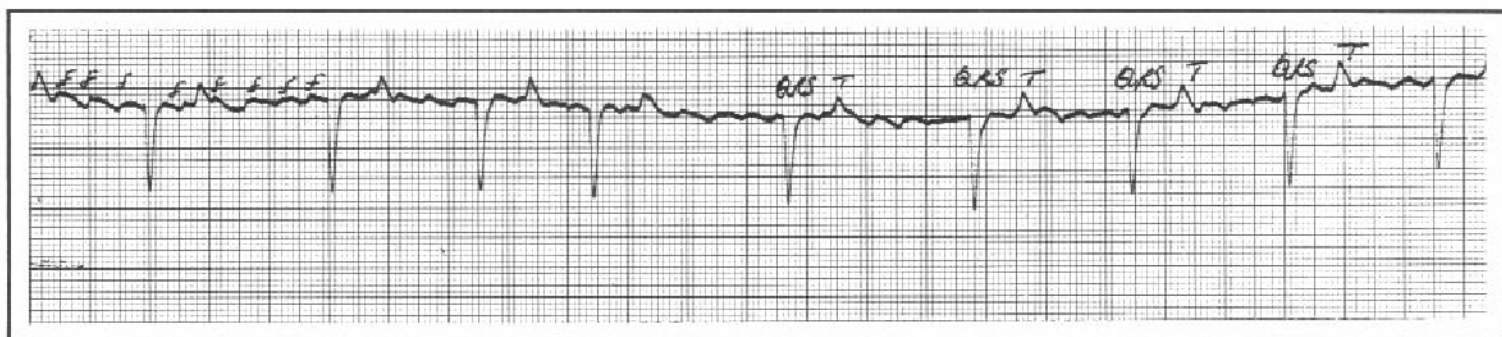


Figure 13.6 Electrocardiograph of an aged Irish Draught cross-bred gelding shows atrial fibrillation (no P-waves) replaced by f-waves

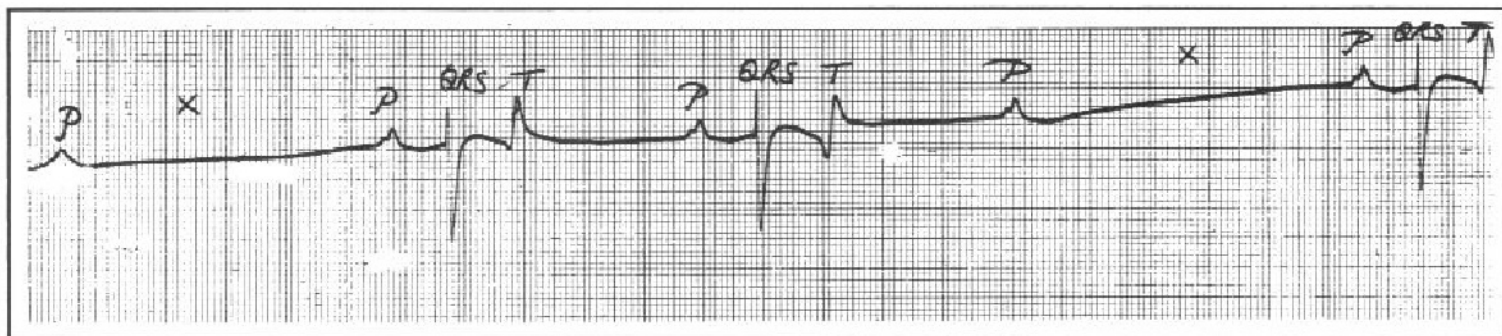


Figure 13.7 Electrocardiograph of a four-year-old gelding, showing A-V block, where the normal pattern is interrupted (X)

The problem with taking and interpreting ECGs is really in the quality of the opinion being expressed, and the competence and confidence of the operator to express that opinion. Sadly, a complicated opinion, expressed extensively in a certificate, does little to assure a buyer, and would have to be simple and positive to have any use.

However, legal considerations tend to leave operatives with the greatest diffi-

culty, causing many such certificates to be an exercise in correct legal description rather than an expression of soundness in the horse.

The more recent procedure of using echocardiography to evaluate the significance of heart lesions is a distinct advantage where the facility is available. Echocardiography is a form of ultrasound. A picture is created of the heart and its valves while they are in action. This

picture allows diagnosis of disease to any of the constituent parts.

Blood Analysis

While blood tests taken to detect the presence of anti-inflammatory drugs, or anabolic steroids, may have a particular importance, the taking of blood in other

circumstances is only of limited use. In some situations, trainers may require evidence indicating a horse is free of viral or bacterial infection at the time of purchase. However, blood samples, even at their most beneficial, are highly fallible, and only a guide to the real situation. Many horses which are very unhealthy produce blood profiles within normal ranges, while some normal animals may have abnormal blood levels and not be affected by them.

4

Conditions of Sale and Warranties

It is critical that anyone either buying or selling a horse at a public sale does so in full knowledge of the conditions which prevail at that sale. These differ in essence from sales company to sales company, depending on the type of animal sold - e.g. conditions for hunters and riding horses will be different from those for young potential racehorses - and there are material differences particularly between recent conditions applying in British and Irish sales yards compared with those in the USA.

While it is not intended to reproduce all sales companies' conditions here, critical aspects of veterinary examination will be mentioned as well as some points to note for buyer and vendor. As these conditions are evolving, it is vital that any buyer planning to spend substantial sums be familiar with the terms of the particular sale under which he or she will buy. Having this knowledge can save a great deal of heartache, and, for those who are not experienced in buying horses, it is wise to take advice when in doubt. Needless to say, the vendor would be extremely unwise to take a horse to sale without knowing the conditions applying there.

These notes are not intended to be exhaustive, neither are they an attempt to comment on the legality or otherwise of any condition of sale mentioned. Inevitably, however, there are matters which arise that can only be properly answered by a lawyer: people who are doubtful

about any matter are strongly advised to take legal advice.

It will be noted that virtually all catalogues contain a clause stating that the conditions which apply are subject to the law of the land of the country, or state, in which the company is operating. It is a point that should be digested, and this book in no way pretends to provide any advice that precludes it.

General Conditions (British Sales)

1. Responsibility for Horses - It is always necessary to know where this responsibility lies. Generally, a horse remains **the property, and liability, of the vendor** until sold, when it becomes the property of the buyer. However, this transfer of ownership, if dependent on a veterinary examination, will not take place until the veterinary examination is completed.

Where an extended warranty is given, say for proper examination of the wind, or a trial for ability to jump or race, this agreement normally exists exclusively between buyer and vendor and it is up to both parties to agree on liability in case of accident. The simplest way is to have the horse covered by insurance, the cost to be paid by agreement between the parties.

It is usual for sales companies to disclaim any liability for horses on their premises, while still allowing for the terms of the Unfair Contract Term Act 1977.

2. Descriptions – The onus for description is laid at the door of the vendor because sales companies disclaim responsibility in this regard and insist that vendors be accurate and correct in any statement made regarding an animal which appears in a catalogue or is declared by an auctioneer at the time of sale.

Descriptions of colour, breed, sex, age and height: any animal found not to fit its description is liable to be returned unless conditions of sale prevent it. Some companies may consider these errors trivial and not consider return of a horse unless evidence is produced, perhaps backed up by expert opinion, that the animal is less valuable than the sale price made, because of improper description.

3. Vices – All vices must be declared and the horse becomes returnable where these are not. The time limit for returning a horse with a vice is often longer than for other causes and may extend to a week or more, depending on the company and their written conditions of sale. A veterinary certificate to support the contention may be called for.

The following are standard definitions:

A *weaver* is described as a horse that habitually swings its head and neck and transfers weight from one forefoot to the other alternately.

A *boxwalker* is a horse that walks about the box aimlessly and continually.

A *wind-sucker* is a horse that habitually swallows air, irrespective of whether this is associated with grasping fixed objects with its incisor teeth or not.

A *crib-biter* is a horse that habitually grasps fixed objects with its incisor teeth. A crib-biter is not returnable at some sales unless there is associated wind-sucking, though this, as a condition, varies between companies.

A *shiverer* is a horse that shows signs of abnormality of the nervous system that is marked by spasmodic movements of the tail and hind limbs.

4. Returnable Horses – According to the specific sale, horses may be returnable if the following conditions exist and are not declared.
 - a) Not registered – would mainly apply to the Thoroughbred.
 - b) Whistling or roaring. In the case of a yearling (after 1 July of its yearling year), it may not be returned unless laryngeal hemiplegia is diagnosed by endoscope at some sales.
 - c) Wind-sucking.
 - d) Crib-biting – whether or not there is associated wind-sucking.
 - e) Weaving.
 - f) Box-walking.
 - g) Shivering.
 - h) Tubed or otherwise operated on for the wind.
 - i) A rig at two years or older.
 - 1) The horse has run at an unrecognised meeting.
 - k) The horse is on the Forfeit List (a list declaring indebtedness).
 - 1) The horse is the subject of a starting stall test ordered by the Jockey Club.
 - m) A foal described as Thoroughbred would normally have to be registered with Weatherbys and could be returnable if not.
 - n) In the USA, any horse on the starter's, steward's or veterinarian's lists.
 - o) Also in the USA, any horse with eye defects.

The following descriptions might also apply in certain sales.

1. An unbroken horse will not be ridden but must be quiet to lead on a halter.
2. A horse that is part broken should be capable of being ridden with safety by a competent rider in an enclosed school.
3. A horse described as green should be capable of being ridden with safety at slow gaits in open country.
4. A horse said to be quiet to ride should be easy to mount and ride away, easily managed at all gaits and good in traffic.
5. A hunter should be mannerly to ride, quiet with hounds and capable of jumping a novice country.
6. A jumper must be able to jump according to declared ability for the standard of rider suggested.
7. A horse said to have potential for any discipline must have physical capabilities to do whatever is claimed. This matter may become relevant to the vetting and it may be the vet's duty to decide if the horse is unfit for the purpose claimed for it.
8. Driving horses must be mannerly in harness and capable of performing to any standard claimed for them.
9. Ponies for children must be mannerly and manageable, and not pose a threat to any child likely to ride them.

Broodmare Certificates

A mare described as 'believed in foal' will generally have accompanying evidence to support this, namely a covering certificate and a veterinary certificate of manual pregnancy examination carried out within a specified date of the sale. The buyer will often have the right to have the mare re-examined within a certain time after the sale and is wise to do so if there is any question of doubt. If the mare is then found empty she is returnable.

I was involved in the examination of a mare that had been bought in foal for a large sum of money at a breeding sale some years ago. She was found to be empty when brought to the home of her new owner, even though a pregnancy certificate had been lodged from a reputable vet prior to sale. The buyer, in fact, was left with the mare and received no compensation. It appears that the vet was presented with a substitute mare at the time of his examination and provided a certificate based on the information given to him by the handler of the mare.

The lesson to be learned is that a certificate for pregnancy should adequately identify a mare to the satisfaction of the vet examining her. This would not have to include a sketch if the mare was identified against her passport, but would more safely be accompanied by such identification. Alternatively, all mares sold as 'believed in foal' should be subject to manual pregnancy examination after fall of hammer and before leaving the sale yard, or within a given period from sale.

It is extremely important to know the precise conditions relating to any such return, especially the extent of the time limit involved. These are normally stated in the conditions of sale.

Condition of the Larynx

Regulations regarding the condition of the larynx vary under the conditions of sale applying in the USA and Great Britain, especially when relating to the examination of Thoroughbred yearlings sold for racing.

In Britain and Ireland, a horse that is a whistler or roarer, or which has been operated on for any condition relating to its wind can generally be returned unless this fact has been declared. Conditions of sale may state that the horse must be heard to

make a typical inspiratory noise on being actively exercised and must have evidence of laryngeal hemiplegia when examined with an endoscope.

Yearlings are frequently presented for sale with a pre-sale veterinary certificate saying they have been examined and not been heard to make an abnormal inspiratory noise when strenuously exercised. This examination would be carried out within a specified time before sale. The yearling may then be subject to re-examination at the request of the buyer – again, depending on conditions of sale – when, if found to make such a noise, is returnable. This examination will take place at the sales ground, within a specified time period, and the examination may include endoscopy of the larynx for evidence of hemiplegia.

It should be stressed that yearlings making a noise but not showing evidence of hemiplegia on endoscopy are not returnable. (But do read the conditions of sale, and see the conditions for sales in the USA.) Alternatively, a yearling found to suffer from this condition may be sold as it stands with the condition declared.

General Conditions in USA Sales

General conditions of sale are similar to those of British sales, with some noteworthy exceptions.

Horses are described as sold on an 'as is' basis and buyers should not assume there are warranties unless stated. Private agreements between buyers and vendors on these grounds will not involve the sales company.

The following conditions must be declared:

1. Unsoundness of eyes.
2. Wobblers.
3. Cribbers.

4. Bleeders.
5. Horses that have been denerved.
6. Horses on the starter's, stewards' or veterinarian's lists.

Some sales specify that the time for notification of return varies with age – i.e. up to seven days for older horses and within two days for horses less than two years old.

Horses to be returned as rigs must have reached the July of their yearling year. This is because many young horses will normally suffer late descent of one testicle and this is permissible.

Special conditions now exist in the USA for young horses which have reached July of their yearling year or older and have not raced.

Such animals, at the request of the buyer, are subject to post-sale upper respiratory examination by endoscope. This usually applies to the immediate period after sale and before the animal in question has left the sales yard. The examination is carried out by a vet specialising in equine practice who may be nominated by the buyer.

The following conditions are listed as abnormal and allow for a sale to be rescinded:

1. Laryngeal hemiplegia, defined as complete or partial inability to abduct the cartilage (sic).
2. Rostral displacement of the palatopharyngeal arch.
3. Epiglottic entrapment.
4. Permanent dorsal displacement of the soft palate.
5. Severe arytenoid chondritis or chondroma.
6. Subepiglottic cyst.

The horse can be rejected for any of the above conditions, except in the case of a dispute where conditions of sale will allow for further opinion. In such a case, it may be stated that the horse shall be the

property of the person who loses the dispute.

Broodmare Certificates

In the case of broodmares in the USA, pregnancy certificates are based on manual examination only and are to be dated within 10 days of the sale. If the mare is sold empty she may be presented along with a certificate of examination which declares that, in the opinion of the examining vet, her reproductive system is normal and that the vet can find no reason why she should not go in foal. A buyer is allowed to have a mare examined by a vet after sale, depending on the conditions of that sale. If there is a conflict of opinion, the sales company may call for another opinion, which might be made binding.

It generally applies that a buyer would not be liable for debts outstanding on an animal, e.g. stud fees, etc. However, the buyer should read the conditions of sale and listen to all announcements made by the auctioneer. A mare could be sold with liability for the stud fee for the foal she is carrying. This would have to be announced beforehand, but might be absent from a catalogue or missed by a buyer who was out of hearing range when the announcement was made.

It must be remembered that all conditions of sale are subject to the laws of the state or country to which the sales company belongs. Where there is a problem it is always wise to consult a lawyer to check on your position.

Pre-sales Veterinary Certificates in Ireland

The modern concept of pre-sales vetting for young unbroken National Hunt horses

was introduced by Michael Opperman at Ballsbridge Sales in Ireland in the 1970s. The purpose was to increase the final tally of horses sold by eliminating at an earlier stage those which would not pass the vet.

The need for such a concept arose because of too many horses being spun after sale, and disappointed buyers failing to find other desirable lots.

The procedure has continued to date and is expanding in use, although veterinary authorities favour examination only on behalf of a buyer.

Briefly, horses are examined on behalf of the vendor, initially, before arrival at the sale. They are then re-examined by a panel of vets provided by the sales company before entering the ring. Conditions of sale do not allow for re-examination later and the buyer is generally liable for the fee of the second examination.

It is generally emphasised by sales companies that the veterinary certificate is valid for the time and day of examination only and advice is given to prospective buyers to check with their own vet before the sale if they are in doubt about an animal.

It is worth stating here that certificates are available at the sales office before animals enter the ring. All professional buyers (trainers, agents, etc.) make it their business to inspect these certificates long before horses are due to be sold.

Examination of the certificate should ensure that the animal is designated as being suitable for the purpose for which it is being sold (racing, riding, jumping). Considerable complications may arise where this is not done. While it is the veterinary surgeon's obligation to ensure this is entered, the certificate is meaningless without it. The buyer will therefore suffer.

The same conditions apply in some British sales and animals so sold are not returnable on post-sale examination on behalf of the buyer.

Contagious Equine Metritis (CEM)

At some sales, barren mares must be accompanied by a certificate to state that they have been swabbed for CEM from the clitoral fossa and sinuses, and that these swabs are negative on culture for the organism causing the disease (*Taylorella equigenitalis*). Swabs must have been taken within a specified time limit and processed at an approved laboratory.

Influenza Vaccination

Proof of vaccination for equine influenza is also essential for most sales yards as agreed by racing authorities in Britain, Ireland, France and West Germany. Some sales companies specify that no horses suffering from infectious disease, or known to have been in contact with such a disease, will be allowed entry to their sale. One would hope we will shortly see a time when this is rigorously enforced at all sales. Similar regulations regarding EVA and EIA already apply at some USA sales.

2. The term 'believed to be sound' is not necessarily a warranty, only an opinion. Any description designed to mislead or confuse could be liable in law.
3. A description, if so stated in the sale conditions, can have a special meaning. A 'good hunter' would have to have been hunted, be capable of being hunted, but might also be warranted sound, or partly sound. A 'good hack' would be quiet to ride but the description might also imply that the animal is sound for the purpose.
4. Before buying at a public sale potential buyers are advised to read with care the conditions of sale as printed in the catalogue; any future problem upon purchase will be resolved against the background of these conditions.

A buyer is advised to check certificates relating to any horse he or she wishes to buy, be these veterinary certificates relating to health or covering certificates, passports, etc. A buyer is also expected to make note of all race entries, and details of eligibility to race in specific competitions such as hunter chases and point-to-points.

Warranties

These may vary by definition and by conditions of sale and where described in catalogues should be noted with care.

Points to consider:

1. A suggestion that a horse described as sound is only partly sound could be considered to be misleading and might have no standing in case of a dispute.

Drugs

Conditions relating to the presence of drugs generally apply to anti-inflammatory drugs to hide lameness and, often, anabolic steroids to promote muscle growth. However, the finding of any drug likely to materially influence a horse, even a tranquilliser to alter temperament, would render that horse returnable.

15

Some Comments on the Law

This chapter outlines areas of the law which are associated with the purchase and sale of horses. Some specific cases are referred to.

Public Sale

In general, horses sold at a public sale must be reasonably fit to fulfil the use designated for them. In other words, a horse sold as a racehorse must be able to race, a show-jumper must be able to jump, and so on. A horse must not have a defect present that is likely to prevent a normal lifespan in that particular activity.

In the United Kingdom, The Sale of Goods Act 1979 covers this situation, and the buyer is relying on the seller's skill or judgement in describing that fitness of purpose.

The horse must also be of merchantable quality, although this condition does not apply to defects brought to the buyer's attention before sale. If a buyer examines a horse before sale, there is an obligation to be observant and knowing, and there is no protection for the buyer in regard to defects which he or she ought to have seen.

What this effectively means is that a buyer inspecting a horse with an obvious defect, such as an injured tendon, is expected to see and recognise the problem. A plea of ignorance is not acceptable.

Neither could it be said that the buyer failed to inspect it, unless expressly prevented from doing so.

The horse, however, must correspond to its description and the buyer is entitled to return the animal or sue for damages where this is not so.

Private Sale

In a private sale, the rule *caveat emptor* applies. It is worthwhile, at this point, clarifying what this means.

Caveat emptor is a common law maxim warning a buyer that he could not claim that his purchases were defective unless he protected himself by obtaining express guarantees from the vendor. This maxim has been modified by statute, particularly the Sale of Goods Act 1979, which is a consolidating statute. Contracts for the sale of goods have implied terms requiring the goods to correspond with their description and, if sold in the course of business, to be of merchantable quality and fit for any purpose made known to the seller. Each of these implied terms is a condition of the contract.

What this effectively means is that it is up to buyers to protect their interests, and to make sure they are informed. This is why it is best to get a professional opinion, especially if there is doubt about an animal or if you, the buyer, are not experienced in

the purchase of horses. A veterinary surgeon in this situation is acting as a professional expert on your behalf, providing special knowledge that is based on training and experience. The purpose of the examination is to ensure that the animal fits its description and that it is suitable for the purpose for which it is being bought.

A buyer may also engage any other form of desirable opinion, be it an agent or independent adviser, to assist with information about form and ability, conformation, action and, say, ability to jump. There are many people providing specialist services in this regard, and they are services which often prove invaluable even to the expert.

While veterinary opinion is essential nowadays, a veterinary certificate is only a limited form of guarantee in respect of purchase. It is not for the vet to provide a warranty, simply to examine the animal and record all findings on a certificate. The animal is certified as found at the time of examination only. There are no guarantees given as to the likely future soundness or performance of the horse.

Where a vet expresses an opinion on a lesion uncovered in the course of examination, this opinion is based on education and experience. Where, for example, a superficial eye lesion is found which, in the vet's opinion, 'is not affecting vision, and not likely to affect the future usefulness of the horse', this means exactly what it says. It is an informed opinion, and, if it happens to be wrong, bears no liability on that account. If the vet failed to detect it, or did not comment on it, the situation would be different.

If, on the other hand, you decide not to use a vet, it is your responsibility to acquire all available knowledge of the animal. Thus, if there is an existing tendon injury, warts or sarcoids (or anything else that is material and self-evident), you are expected to make yourself aware of this. The fact that you have not will not permit

return of the animal in most cases. This, however, covers only that knowledge which is attainable; it is the vendor's responsibility to declare any information relevant to the sale of which he is aware. Any vendor is likely to be found culpable if failing to do so.

Certificates provided by a Vendor

Any general certificate provided by a vendor, as stated earlier, should be treated as irrelevant and a fresh opinion obtained. If the sale is genuine, the vendor will not complain.

The only exception to this is where a vendor's certificate expresses a limited opinion on a particular defect or blemish – relating to a specific lesion – e.g., an abnormal foot (preferably with radiographs available), heart murmur, or eye lesion. The opinion should be that of someone with specialist knowledge in the field, and this should be open to further opinion if required by the buyer.

It is best not to buy where you are unable to satisfy yourself on the soundness of a horse. Do not be swayed by the temptation to accept any general certificate offered by a vendor; it is a false economy. If you are refused permission to have the horse examined independently, do not buy.

In the USA veterinarians are not allowed to provide information about one of their patients to a third party without the owner's consent. Therefore it is wisest to insist on having an independent vet.

Buying Considerations

A buyer engaging a vet to examine a horse should always ensure that the vet is

competently briefed regarding requirements. This may be presented in writing, if thought fit.

In fact, the buyer must advise the vet on all relevant details of matters such as colour, breed, sex, age, height, intended use, any known defects; and any warranties given. It may also be advisable to disclose some information on the price.

Having engaged the vet, you should provide information on all details which are of importance to you, such as temperament, performance, reproductive intentions, together with what food and stabling status is expected. If a horse suffers from a mild respiratory problem and is being bought with knowledge of that, the vendor may have specific recommendations relating to management of the condition. It may be that a special type of stabling is necessary. This should be made known to you, and normally will be. Failure to do so might leave the horse open to return.

Most racehorses being sold suffer from one peculiarity or another. It is as well to find out what these are because a horse may be useless without specific knowledge of this nature. Some horses, for example, react to particular types of feeding, others may be perfectly healthy if kept off hay and straw.

The ultimate decision on whether or not to buy is yours, provided you have all the information required. In some cases, the veterinary examination may be included as a condition of sale, and the onus may then be on you to complete the sale if the horse is passed. This is normally a condition at public sales, again, depending on what is declared in the catalogue.

A private sale is also likely to be dependent on vetting, and it is, therefore, wise to ensure that the vet reports directly to you afterwards, without committing you to a purchase. It may be that something detected does not suit your purpose, even if it does not amount to unsoundness. For

example, it could be that the horse in question has flat soles, and this is the one thing you did not want as all your riding is done on hard roads.

Warranty

If a vendor states a horse is sound, this is a warranty. A vendor should limit a warranty to anything of which he is aware, because a general warranty does not allow a claim of ignorance of a particular vice or defect.

However, warranties do not cover defects that are obvious, except, perhaps, when an agreement to buy is made without the buyer being present, or without seeing the horse.

A warranty in law is any statement of fact made before or during a sale, before the transaction is completed, provided that the statement is intended to be a warranty. When a horse is described as 'a chesnut mare, seven years old, quiet to ride and drive, warranted sound', the only warranty is to the soundness. If used alone, warranted only means soundness. A court may have to decide if any statement made was intended as a warranty and therefore part of the contract of sale.

Soundness in Law

Baron Parke in *Coates v. Stephens* (1838), stated 'If at the time of sale a horse has any disease or defect which actually diminishes, or in its ordinary progress will diminish, its normal usefulness, it is not sound.'

Halliday v. Morgan (1858) extended this to include 'a congenital defect present from birth which at the time of sale renders the horse less than fit for reasonable use'.

Vice

A vice is defined as 'a defect in the temper of a horse which makes it dangerous or diminishes its usefulness, or a bad habit which is injurious to its health' (Scholefield v. Robb [1839]).

Unsoundness relates to physical defects while vices are concerned with the horse's temperament.

Beware of statements such as 'seen to weave occasionally at meal times', or 'seen to weave when moved to a new stable'. The truth here is that the horse is being declared as a weaver, or crib-biter, or whatever. It may be that you are being told the truth, and it may not. If you do not want a weaver, stand clear. Having said that, weaving is not the most damning trait in a good horse and many useful performers weave without detriment to their ability. The same may apply to crib-biters and wind-suckers. On the other hand, horses which are badly affected by any of these vices may be in poor physical condition, and may be unable to perform to the best of their ability. Many do genuinely only weave at a given time, such as feed time, or before going out, or perhaps briefly on change of home. The suggestion is often made that weaving horses encourage others to do the same. While some horses are natural mimics, there are many situations in which one horse weaves in a yard and this has no effect on the other horses around it.

Description

Descriptions form part of a contract of sale and subjects of fact which are published in a catalogue and give a horse added value can amount to warranties.

A buyer must read descriptions with care, always examine a horse before bidding and follow the conditions of sale.

All sorts of catalogue descriptions are designed as advertising material and may have little relation to the animal presented for sale, even if technically correct. A typical example of this is where a horse's breeding details are of the highest order, except the animal in question might prove to be underdeveloped with no potential for anything of note. If there is no description in the catalogue – except for age and colour – the horse will not compare with the expected picture generated by the breeding.

Claims that an animal is 'quiet to handle' or 'quiet to ride' are limited assurances on temperament and training and would normally not be used to describe a horse that was fractious or bad-tempered. Such a horse would normally be returnable if found to be other than as described.

'Has shown the potential of a future racehorse', on the other hand is only an expression of opinion and holds no ground as far as warranty is concerned. However, claims that a horse is likely to make a racehorse could have implications if any factor exposed on examination made it unlikely that it would stay sound in training. Therefore the description above would have, despite its looseness, an influence on the sale.

A statement that a horse is 'good-looking' represents a very subjective opinion and there is no reason why such a claim should have to hold water. Yet it could fool the unwary. A horse is not necessarily 'good-looking' simply because it says so in a catalogue.

A Thoroughbred horse that is a twin is normally described as such in a catalogue and to withhold that information might leave a vendor liable.

It is also desirable that obscure conditions, like squealing, should be declared, although it would be uncommon to see such a declaration today.

Drugs

With older horses especially, it is always wise to consider the subject of drugs, and this may also apply to some younger horses. While freedom from drugs is included in the conditions of sale by some companies - and random testing of horses at sales is presently being carried out in France - in a private sale a vendor must give consent for the taking of samples. While a verbal or written assurance may be helpful, it is not a guarantee. If the horse happened to go lame the following day - as a result of being no longer under the effect of an administered substance - there is then no proof. However, most vendors are honest, but who is going to tell you that they have used a drug to make an animal sound for the sake of a sale?

Where there is reason for suspicion, it is better to insist on blood samples being taken. If there is nothing to hide, the vendor will agree. If not, it might be best to buy another horse. However, at a public sale, you may be bound by the conditions if the vendor refuses to allow a blood sample to be taken. You could always have a sample taken, in those circumstances, after the sale is completed. It would still hold substance in the event that the horse did go lame in the following days.

Unfair Conditions

It is generally not possible to impose conditions on a sale which will not hold up under the law of the country or state in which a sale is being held. Virtually all catalogues will state that these laws are paramount and that disputes will be subject to them and cases heard in the relevant courts.

Where a vendor states, for example,

something like 'maiden filly, has not been covered', and the filly turned out to be in foal, she could be returned. This applies, even if only stated verbally between the parties and not defined in the catalogue, irrespective of the conditions of sale (*Couchman v. Hill* [1947]). In this case, a conversation between the parties before the sale amounted to a warranty which overrode the condition in the printed terms and the contract was made on the basis that the animal was warranted not to have been mated. In the particular instance, the vendor and the auctioneer confirmed verbally while she was still before them in the ring that a heifer being sold had not been served. Conditions of sale stated that there was no comeback against misdescription or catalogue error. However, the case was won by the buyer, when the heifer proved to be in calf, and the conditions of sale were found not to apply in the particular circumstance.

Reasons for Sale

Excuses as to reason for sale have, generally, to be taken with a pinch of salt. 'Sold because the owner is overstocked' is meaningless, but creates the impression, at time, that a horse is genuine when it is not. It should be appreciated that many such ploys are aimed to catch the inexperienced and unwary. Perhaps the owner is overstocked, but might be selling off the least sound stock, or the least promising to make room for more. There is a whole variety of these reasons, which may only amount to dressing in a catalogue or advertisement. Do not be overimpressed unless the animal proves worthy of the claims made for it.

The reason may also be to impress people who feel they are competent to do their own buying, though they are not. Such people tend to be gullible and rely

unduly on the impression given by declarations which are there only to fool them. horse may have a history of refusing to race or might have been unsound.

Misrepresentation

Misrepresentation could be grounds for rescission of a contract. In *Naughton v. O'Callaghan* (1990), a racehorse was found to have been improperly identified when sold as a yearling, prior to its racing career. The buyer sued because the animal he bought was subsequently found not to have the breeding as presented in the catalogue for sale. A mistake had been made when the animal was a foal and a second party was brought into the action. The buyer, who acquired the horse as a yearling, sued because of misrepresentation and the defendants were found negligent. Damages were decided as being equal to the difference between the purchase price and residual value after the racing career.

In *Minson v. Crawford* (1992), the buyer, a man with a minor heart condition and bad back wanted a quiet horse to ride for hacking and to hounds that should 'jump well, be good in traffic and not be wild or unruly'. Instead he got Bridget, a mare, who was anything but what was required. She backed up, plunged and spooked and was difficult to load; she was also difficult to get into her stable.

The vendor, a dealer, was eventually found guilty of misrepresentation which fell short of deliberate fraud. He was fined and also lost the mare because the buyer had sold it on for a nominal sum.

Changes of Name

Changes of name are not common with Thoroughbreds, but where names are changed it is advisable to check previous history and form in the original name. The

Time Limits

Where there is a time limit for returning a horse this must be reasonable. If a horse is injured after a defect is discovered and this is within the time limit, and it is not the buyer's fault, then the buyer is not liable and can return the horse. If the horse should die, then the loss will fall on the vendor, providing the buyer is not at fault. If a warranted horse is sold on, then the new owner has a claim against the original vendor in which he may be joined by the first buyer.

Agents

An agent might not have authority to provide a warranty, although a groom might. If a groom gives a warranty without authority, the sale is not binding (*Brady v. Todd* [1861]). Where a servant is employed to sell a horse and receive the price, there is an implied authority to warrant the horse (*Alexander v. Gibson* [1811]).

Trial

It is not unusual for horses to be taken on trial before purchase and both parties should exercise caution. Such arrangements should be agreed and set out in writing.

A person borrowing a horse will be liable for the slightest act of negligence on his part. The borrower is liable for feeding, vets fees and damage to the horse including third party damage. The borrower is

only entitled to use the horse for the purpose for which it is lent, i.e. he cannot hunt or race unless this has been agreed. The lender must disclose vices and relevant information.

Contract at Auction

At auction, three main contractual relationships exist between buyer and vendor and auctioneer. These different relationships are:

Buyer and Auctioneer

The contract between buyer and auctioneer occurs at fall of hammer. An auctioneer cannot give a warranty on a horse unless with the express instructions of the vendor. An auctioneer has no implied authority to warrant (*Payne v. Lord Beaconsfield* [1882]) and an unauthorised warranty by an auctioneer will not bind the vendor.

Vendor and Auctioneer

The contract between vendor and auctioneer commences when the vendor gives the auctioneer authority to sell an animal on his or her behalf. It is bound by the terms agreed between them – generally those laid down by the sales company, involving fees and commissions, and usually includes a clause preventing the prior sale of the animal. A private sale conducted at the sales grounds is normally included and liable to the same fees and commissions as if sold in the sales ring.

Buyer and Vendor

The contract between buyer and vendor

occurs upon fall of hammer. It is governed by the conditions of sale and by the laws of the land in which the sale is conducted.

Unregistered Horses

If an older horse is sold without being registered, especially a Thoroughbred, it is important to take care and to be aware of the possible pitfalls involved in late registration. There may be considerable expense and if it is not possible to verify parentage, registration may be impossible.

Points to Consider

Catalogues may state that 'believed sound' is only an expression of opinion and not a warranty. Take care.

'By a sire who gets winners' means nothing. Your horse is not guaranteed to have ability on this account.

'Made millions as a yearling' is equally uninteresting, except that it will signify the animal was good looking and well bred as a yearling. It gives no assurance of the animal's current soundness, ability to perform, or temperament – all of which could be wrong – and amounts to nothing more than news, and old news at that.

There is also a tendency for this attitude to be extended to young unbroken horses. News that a previous year's produce from a mare – or sire – made a fortune is only in print to fool the gullible, or create a false market based on an impression of worth. I can recall a particular family of horses that was sold on this basis and each year the price went up, but the whole lot of them were useless and never won a significant race between them.

There is, of course, another side to this coin. Horses may have considerable defects (e.g. an old tendon injury, they

may have been Hobdayed, weave and wind-suck, or have contracted feet) and still be value for money. The catalogue description may deter any prospective buyer, but the horse could still be genuine, have the capacity to perform well and go on winning races for ever more. The important thing is to be objective, take advice and weigh up the good with the bad. If the horse is currently performing soundly, it is a point in its favour. However, it may not have been back in training long enough to test any former defect, and this could be critical.

Remember too, if you buy a horse that has had previous tendon trouble, do not push it too hard early on. Take plenty of time getting it fit, three to four months at the very least, with some hunting and plenty of long slow canters. It will pay dividends in the end.

'Will run up to time of sale' may be an indication that a horse is sound for racing purposes, but check the form. Many unsound and sick horses are sent racing. This is not a warranty of soundness.

A declaration that a horse is untried might be perfectly genuine, but difficult to prove in most cases.

A declaration that a horse was successfully operated on for roaring is really only a statement of past fact. To suggest that the operation is a success is subjective, unless proved on the racecourse, and there is no guarantee the condition, though good at present, would not progress in the future. If a horse is still making a noise after such an operation, it is unsound, even though every effort may have been made to give a different impression. The horse may have been scoped and a certificate presented to state that there is no visible abnormality present. The only advice that can be given to a buyer in this situation is that purchase is a gamble. The price should reflect this. Alternatively, such a horse could be bought, if it has shown it can win races

despite the problem, with a clear understanding that the condition might yet progress.

Where an old injury is declared and the suggestion made that it is of no significance, radiographs may be required and a further professional opinion sought to ensure that this is as stated. It is seldom wise to take too much on trust. Be sure to protect your interests and avail yourself of any warranties provided. If you are invited to ride an animal, do so, or have someone competent do it on your behalf. Always have a horse vetted and use your own vet to do it, if possible.

When judging size in a young animal make certain of its age first and remember that some horses continue growing until their sixth year. However, a small foal will probably be a small yearling and may never grow enough to gain a premium price, unless it proves to have ability.

Remember too that grossly exaggerated claims may have no significance. A suggestion that a foal will make 16 hh or more as a fully grown horse is not a warranty and may or may not prove to be true. Such a claim in relation to a show pony could be even more critical, where a few millimetres might have a significant impact. Also, a claim that a horse is strongly fancied for a race several months away is fanciful to say the least. It may read well, and may even be the opinion of the vendor, but those who train horses will be quick to appreciate the pitfalls that stand between such hopes and eventual reality. They are legion.

The purpose of this chapter has been to simply encourage the buyer to be careful and well informed when approaching any sale. Always take veterinary advice when in doubt, but be sure to do your own checking on catalogue descriptions, etc., and be sure to examine diligently any animal you wish to buy. If you find yourself in trouble, contact a lawyer immediately.

6

Some Buying Considerations

Virtually all sales companies require buyers to inspect horses before purchase and this will be stated in conditions of sale. Those who buy are responsible for their own decisions and not free to claim ignorance where they have made a mistake. Remember, unless otherwise stated, a horse may be sold as it stands without warranty relating to health or prospective use. It will not be returnable unless some specific condition allows it.

For those who intend to sell on again, there is a saying: 'the day you buy is the day you sell'. What this suggests is that a horse should be sound on the day of purchase, especially if you intend selling on.

Buying at Sales

If you are going to buy a horse at a sale, familiarise yourself with the conditions of that sale which will virtually always be printed in the catalogue. Discover the general purpose of the sale, and the way in which the sale is run.

Consider:

1. The type of animal being sold.
2. Is there a veterinary panel or not? At all bigger sales there is usually a resident panel, though there are exceptions to this.
3. Flat-bred yearlings are routinely vetted for their wind.

4. Young National Hunt horses are often subject to pre-sale vetting.
5. At some sales all ridden horses can be rejected if found to make an abnormal inspiratory noise. There may be an obligation to have an affected horse examined by endoscope.
6. Some sales companies will not permit young horses to be tried for their wind if the vendor claims the animal has never been lunged.

If the sale is simply a dispersal of older ridden horses, there may not be any pre- or post-sale vetting on the premises and this is something you will want to be aware of.

The conditions may allow you to have a horse vetted after purchase, within a set time period, at your own discretion. For this reason it is important to have done your homework before the sale and have selected the animals which are likely to be of interest to you. Take particular note of the terms under which each animal is being sold.

1. Is there a warranty?
2. Is any unsoundness being declared?
3. Are there any vices?
4. Is the horse being sold as it stands with no assurances other than those mentioned in conditions of sale?
5. Can you have the animal vetted later?

It is very important to assure yourself that a long descriptive piece associated with a

horse in the catalogue is not whitewash. If you are in doubt, ask for advice.

Veterinary Certificates

If any veterinary certificates are being presented, ask to see them. These might take the form of pregnancy or fertility assurances, or may amount to a full certificate of soundness carried out on behalf of the vendor. There could also be a limited certificate referring only to one particular problem from which the animal is suffering. Any such limited certificate means that the condition is being declared, together with a professional opinion on its significance. Make sure you read it. The fact that it is being declared could mean there is no warranty attached to it.

Unwarranted Horses

With any unwarranted horse, try to find out if there is a problem. Ask for professional advice if you are unable to find anything wrong. However, it may be that the vendor will tell you gladly. If a fault is unlikely to affect the horse for the purpose for which you intend to use it, it is to the vendor's advantage to be open.

Make as many enquiries as you can about the history of the animal, its likes and dislikes, soundness, why it's being sold, temperament, ability, etc.

Remember that any obvious blemish, be it a tendon injury or a skin tumour, is there to be seen. There is no point in trying to return a horse if you have failed to observe it.

The whole exercise is best done in an organised and professional way to avoid pitfalls and disappointment. Note the horse's past and recent form and make a point of finding out if it has been out of

action for any length of time. Also enquire if a young horse is broken or unbroken, or simply backed and ridden away. All such detail is critical.

Make sure you do not end up with a young horse that cannot be tried for its wind, perhaps, when soundness of wind is critical to your purpose.

Sales companies generally allow potential buyers to have lots examined privately before sale by a vet, with the permission of the vendor. Such examinations do not include exercising a horse for its wind and have no influence on the conduct of the sale. It is a facility which should be availed of when horses are sold without warranty. Many vendors also make their animals available for riding and vetting in the days prior to the sale at their home. This will generally be indicated in a catalogue and shows confidence and goodwill on the part of the individual selling.

If you inspect an animal and have doubt about something you see, always seek another opinion. Vets on duty at sales will express an opinion as to the significance of a particular blemish and ease your mind before the animal goes to the ring. A purchase may still be subject to examination after sale – depending on the conditions under which it is sold – or could be returnable for improper description or vice, if either applies. But it is possible to buy with a clear mind in most circumstances once plans are made and steps taken deliberately at each phase of the process.

Inspection in the Stable

If you have decided to make a purchase, visit horses of interest in their stables. Look for evident faults and make a note of them. Ensure that a catalogue description fits an animal, especially when relating to height. If you have doubts about the age, get a professional opinion.

Look out for details which might be of importance. Does the horse eat its bedding? Does it have a cough? Any evident vices? What kind of bedding is on the floor? A horse that is allergic to dust might have special bedding provided. Watch the expression and the way the animal behaves when you approach it. A bad-tempered horse may put its ears back, bite, kick or chase you. On the other hand, it might just be playful.

Be careful when approaching horses in the absence of the owners or their staff. If anything happened to an animal, or yourself, you might be found liable. Always ask for permission to have a horse taken out of its stable, or examined on your behalf by a vet.

When you have had a satisfactory inspection, have the horse taken outside. Experienced buyers make their decisions quickly and horses are frequently rejected on sight.

However, if a horse is of particular interest but with some evident blemish, take further advice. The exercise is well worthwhile, may save you time in the long term and avoid the buying of an animal that will subsequently fail to pass examination.

Make your own judgements about action and movement, but do not be afraid to call for help. While many horsemen are expert, others are less experienced. Happily, however, the nature of the horse is to make all who deal with it appreciate at times how little even experts know. This is one of the fascinations of the animal, and means that even the newest amateur is entitled to look, learn and form an opinion.

Confidence only grows with learning, though. It is a secretive field and people are often slow to divulge what they know to others. Do not be too proud to ask for help.

Outside the stable, follow the procedure of examination as described earlier.

At the Ring

Try to make a point of seeing all suitable horses before a sale commences, then go to the sale ring. Remember that a particularly beautiful horse with good breeding and elegant movement is going to attract a lot of people, and you may not manage to buy it. Be prepared to turn your attention to others, if you can find any to suit your intended purpose.

Be sure to listen to any fresh announcements about a horse made by the auctioneer; these can be critical. A vice could be declared which is not printed in the catalogue; if you fail to hear the announcement, the problem is yours.

It is foolish to bid on horses which you have not inspected outside - or had inspected on your behalf by someone competent - unless the sale allows you to have the horse examined later by a vet. Appearances can become distorted, especially in a crowded sale ring. Size is difficult to gauge, as is action. Blemishes which are perfectly obvious outside are often impossible to see inside.

Many people who buy without inspection have reason to regret it afterwards. Remember that many horses are sold because of a lack of ability, an unsuitable temperament, or a physical impediment to the performance of their intended work.

A client of mine recently purchased a horse at a public sale on the basis of the personal assurances of the vendor, although the horse was presented without warranty. In the catalogue, every effort was made to create the impression that the animal was racing sound and likely to continue to be so.

The horse subsequently proved to be unsound, but my client was unable to return it. The sales company insisted there was no warranty and the vendor denied his assurance of soundness because there was no witness to the conversation. While the matter might have been pursuable

through the courts, this was not done, and my client was left to make the most of the horse he had bought.

for, or the conditions of sale may come into force.

Vetting at Public Sale

Having made the purchase, always make sure to be present at the vetting, or responsibly represented by someone who has authority to decide on your behalf and who knows your requirements. The vet may want to consult you over vital matters anyway, and the result of the examination might be dependent on your consent. For example, you as potential purchaser, might not be bothered about a splint if it was your intention to use an animal for purposes other than showing. Perhaps it would make a high quality hunter, or point-to-pointer. If you are not present, or have not briefed the vet, he might decide the horse does not fit its description (if this implies it should be without blemish, say for showing) and reject it on that basis. It is not relevant that horses win showing classes with blemishes. A horse described as unblemished is like a new car; it can collect its blemishes later.

Make sure to be at the examination from the start, so that you can see all stages; watching the way the animal behaves, how it responds to the interference of the examiner and how willing it is at walk, trot and when on the lunge rein. While the vet will not wish to be constantly badgered, he may wish to consult you from time to time, and will be reassured by your presence.

In the case of a lesser problem, say a blemish of the eye, which, in the opinion of the vet, is not clinically significant and not affecting vision, if you are unhappy with the opinion given, you will normally be able to have a second opinion. If you are then satisfied, the sale can proceed. If the opinions differ, a third may be called

Private Sale

Generally, in private sales, the buyer will have seen and tried the horse, and perhaps have asked for further advice on suitability. The veterinary examination may be the final measure prior to completion of the sale.

Be sure to speak to the vet yourself and advise him of your requirements. This conversation is in fact the basis of the contract between you. It may even be confirmed in writing. It is important to provide a full description of the horse, especially relating to intended use. If you are in doubt about height, ask to have the animal measured. If there is no certified proof of age - which would have to be attached to a passport or breed registration document - express your concern. While the vet may not be able to age the animal to a specific year, it will be possible to let you know if the purported age is very wrong.

Provide information, also, of any declared blemish or vice and give your views on these. If there is a tendon injury, a foot abnormality, etc., specify your requirements and relate these to intended use. Ask for radiographs or any other form of specialist examination if you see fit.

Finally, be sure to ask the vet to report back to you first before giving any information to the vendor. It is best in fact, in requesting a vetting, not to state that you will buy a horse if it passes the vet. Rather you will make a decision on purchase when in possession of all the facts. Something trivial may emerge that does not, in fact, render the horse unsound, but it may be something you do not wish to accept. This is quite in order and in no way unreasonable.

It is not uncommon for a buyer to be

absent when a horse is being vetted in a private sale. The sale is not concluded until the vet has reported back, then, if there is any inconclusive point, the matter can be discussed and you may decide to have the animal anyway. But if nothing untoward has been found, you are then at liberty to complete the sale.

The vet may well be happier to have you present in order to discuss any findings and have your clearance before proceeding further. But it is your right to question any part of the examination and reject the animal if a legitimate reason is found, depending on the terms of the contract you have made with the vendor.

If there is a minor problem with which you are unhappy, you have the same prerogative as at a public sale; a second opinion, which would be provided at your expense. Any lesion found, though not, in the opinion of the examiner, of critical importance, is often adequate grounds on which to refuse to complete a sale, unless that blemish has been declared in advance. Providing you are not committed to completing the sale if the animal passes, you may, if you so choose, withdraw.

The same points might apply to temperament. If an animal is exceptionally bad-tempered, you might feel it could simply be tiredness, or bad-training, or the fault of the handlers. You might feel competent to deal with the problem when you have the animal at home. On the other hand, the choice is yours to reject the horse, or the vet might feel unable to carry out the examination fully and thus refuse to write a certificate. The horse would then remain the property of the vendor.

When a horse is being exercised strenuously, and it fails to extend itself adequately on the lunge – either because of poor facilities, lack of training, or temperament – the vet will wish to discuss the matter in full with you. It may be that the vendor will agree to provide an extended warranty for this purpose only. You might

be allowed to take the animal home, and have it examined again when it is fit to be lunged. The warranty would allow return of the horse, within a set time, if not sound in the wind.

This is often done at public, and sometimes private, sales. However, a horse may be injured during that period and the potential purchaser might be held liable for this. It is important to have such an eventuality discussed, preferably covered by insurance, the cost to be borne by agreement between the parties concerned.

Selling On

If a heart murmur is heard, the veterinary surgeon is obliged to relate this fact to you. In the vet's opinion, the murmur may be of no clinical significance and he will pass the animal. You may then ask for another opinion, or may be happy to accept the opinion declared. However, it is important to remember in this situation that you might wish to sell the animal on at a later stage. The veterinary opinion then expressed might be at variance with the present one. Your animal, though perfectly sound in fact, perhaps performing successfully in competition, may be devalued. It is always something to keep in mind. Value is a very delicate matter when dealing with horses. If you are in the business professionally, to make money, this type of situation has special significance. The presence of such a murmur might easily have an influence on the value of a horse at any future stage.

At a public auction, if, in the opinion of a vet, the murmur he has heard is not significant, you would normally be obliged to complete the sale, or request a further opinion. If the second opinion agreed with the first, the matter is concluded. In a private sale, the vendor often tends to take a less rigid position. How-

ever, these situations are never simple. If you, the buyer, have contracted, even verbally, to buy the horse subject to the vet, it may be very difficult to withdraw if, in that vet's clinical opinion, the murmur has no significance. It is best, always, to avoid committing yourself in this way until in possession of all the facts. While some vendors may not agree to this, many will.

Ideally, any distinct lesion should be declared before sale, the animal to be accompanied with a certificate as to its significance. In this way, a buyer who would not wish to own a horse so afflicted has the option from the outset not to buy.

It has to be appreciated that the law insists on openness and honesty. The continuing trend with legal conditions affecting any sale is for full disclosure of facts so that a buyer can act without fear.

Veterinary Fees

The fee levied for vetting a horse is a private matter between the buyer and the vet. It may be a set fee, as will operate at most public sales, where the only unseen cost is likely to be value added tax (VAT). The cost in private sales has to take travel into account, also any special tests carried out. The basic fee covers professional experience and expertise, as well as the fixed overheads involved in running a practice. Time taken to carry out the task has to be calculated in this. Professional indemnity insurance is also a factor. In a field where there is a growing risk of litigation, more vets are of the opinion that the fee should relate to the value of the horse. This is not an unreasonable view.

Vendor's Interests

Any vendor should approach a sale in a positive frame of mind. A failure to do so is to risk devaluing your horse.

Training and Temperament

A vendor preparing a horse for sale will want to give that animal every chance to make its full value and change hands without hitch. It is important to present it in a state of good health, well groomed, and suitably mannered for the purpose. The horse should be partly fit – not just up from grass – and should have been walked for at least three weeks (Thoroughbred yearlings are routinely walked for 12 weeks or more). It should have its feet well attended to and wear appropriate tack that is sound and functional. Under no circumstances should hoof oil be applied.

A horse that is so temperamental that it cannot be approached by strangers may well be a danger to all who visit it and therefore should not be left alone in case innocent parties are injured. Dangerous temperament should rightly be declared, and would render an animal unfit for sale if detected during the course of examination. There are, in fact, relatively few truly dangerous horses, and for those I have met, no one ever warned me that there was danger. I recall one mare breaking the limbs of two men in 24 hours, and

there was no advance warning, or word of apology from the owner afterwards.

The first priority then must be to ensure that the animal in question is well handled, irrespective of age or state of development, so that potential buyers can approach it and inspect any part of its anatomy without risk. A colt foal, especially a Thoroughbred with potential stud value, will have to allow its testicles to be handled. The day of a sale is not the time to show intransigence, or commence training.

However, it is remarkable how routinely these tasks are carried out even in the strange surroundings of a sale yard.

The environment of a sale is strange, frightening on occasion, and the hustle and bustle means that animals are constantly being pulled out for viewing and liable to be tired and tetchy after a time. Their ability to cope with these situations is often a reflection of the confidence a handler has instilled into them. On the contrary, bad-mannered and obstinate horses often reflect the influence of an individual who does not understand the basic requirements of horse/human relationships, of the need for firmness, or the demand to always be master.

While there are, inevitably, some horses which are naturally aggressive, these are, by and large, in a small minority. The manners shown by two-year-olds in training are a monument to this.

A horse being presented for sale should

show itself off well, must walk, trot and canter to command; turn sharply on either hand when asked, or back without protest for several strides.

Lungeing

If the animal needs to be lunged for vetting, it should be prepared for this beforehand. It does not take a great deal of time – most horses will lunge freely on either rein after a few short spells in a lungeing ring – and it is so much more pleasing if these simple needs are accomplished willingly and with ease.

It sometimes happens that an unbroken horse is found to make an inspiratory noise at home before sale, therefore making it unsound. The honest thing to do in this case is to declare the fact or withdraw the horse.

If a horse is to be lunged, a cavesson and lungeing rein or rope are essential; a suitable whip may also be needed to encourage the horse to keep up to its work. Remember that manners are as important as looks when a horse is being presented for sale.

It should be remembered that horses remain the property of the vendor until the vetting is completed, and no vetting is complete without proper examination of the wind. Should an accident happen to the animal while being vetted, the loss is most likely to be borne by the vendor.

Facilities

It is necessary to have proper facilities in which to lunge horses. Where lunging rings are inadequate – as they can be even on sales grounds – it poses an added risk, and no ring should ever be used where more than one horse is lunged at the same

time. The provision of such facilities is the responsibility of the vendor in a private sale, or of the sale company, as agent for the vendor, at a public sale.

Bad facilities, inadequate tack, and horses that are inadequately prepared are more common causes of incomplete veterinary examinations than almost any others.

Catalogue Descriptions

It is in the vendor's interest to ensure that the description of an animal in a catalogue is correct and to bring any discrepancy to the attention of the auctioneers.

Colour, breed, sex, age, and height are all generally declared and should be correct. A buyer will be expected to have inspected these prior to purchase, except where it is not possible to see an animal first (e.g. if a horse is bought over the telephone). Remember any gross error may leave an animal liable to be returned. The same applies to all other aspects of description.

The height of ponies is more critical because certificates of height, under the Joint Measurement Scheme, will have to be current and valid for the animal.

Declarations and Warranties

Vendors are advised by auctioneers that 'honesty is the best policy', and that it is in their own interests to disclose any known defects that may or may not affect the future usefulness of a horse being sold. This helps to avoid possible litigation, which is inevitably worrying, time consuming and costly.

A vendor is wise to declare any significant unsoundness or blemish which may subsequently affect a veterinary examin-

ation. Say, for example, a horse has a marked swelling in the region of high ringbone. This may have occurred a long time before, and the animal could have a recent history of success in competition, but the vendor should declare the blemish and mention the recent competing history. Purchasers can then approach the animal with some knowledge, and greater confidence, than when simply seeing the blemish in the sale yard and immediately condemning it.

A recent radiograph might be of help, and the whole process works very often to the advantage of the vendor. Where, for example, an evident lesion – like two odd forefeet – is present, the provision of recent radiographs, made available through the sales company, will reassure the buyer, who can possibly involve the opinion of his own vet. A sale is more likely to be completed in these circumstances, as long as the radiographs are recent and genuine.

As a matter of convenience, vendors are asked to be present with the auctioneer at the time their horse is being sold. This allows the auctioneer to clarify points relating to the sale and to make further announcements that form part of the sales details of the horse. An example of where dispute may arise is in the difference between crib-biting and wind-sucking. However, the conditions relating to this problem are liable to vary from sales company to sales company, and it is important to be informed of the true position by reading the conditions of sale.

Heart Murmurs

The veterinary profession has a poor record of condemning horses with heart conditions; many of the condemned animals have gone on to win major races. Fort Leney was one such horse; he won a

Cheltenham Gold Cup. There have been many others, and it is a record that we are not proud of.

The logical approach for any vendor is to find out if a horse has a murmur before presenting it for sale. It is then possible to have further examinations which will evaluate significance. An ECG printout may be provided which, suitably identified and certified, will declare that this animal has a murmur which is not considered to be clinically significant.

However, certificates for this purpose should be short and precise; if complicated, they often tend to confuse. If pedantic and rambling, the potential buyer may be put off. If the auctioneer fails to understand the message, a misleading impression may be given. Still, if such a certificate is declared prior to sale, a buyer can always view it at the sales office and have a professional opinion on its significance.

On the face of it, this is a problem which is not yet successfully solved as horses prove experts to be wrong with great frequency.

Hopefully, in the future, we can expect horses to be certified in a way that provides buyers with better quality information about animals that are for sale. The influence of this on conditions of sale will be something for the selling companies, and lawyers, to decide on. The same applies to any other known blemish.

Previous Operations

Where a horse has been operated on for any major purpose, this should rightly be declared.

While the most common centre of these operations is the laryngeal region, it is not rare nowadays for horses to be sold which have had major abdominal surgery for colic. Parts of the bowel may have been

removed. Prospective buyers are entitled to know about any such operations. They should also be told if a horse has been fired, as, in some cases, firing marks are not easily recognised.

Future Use

Predictions as to the future potential of an animal have to relate to reason, but sometimes allow a vendor more latitude than is wise.

Auctioneers publish descriptions without having the chance to know if they are accurate; the onus is placed on the vendor for what is declared. It is unwise to exaggerate because this can rebound on its author.

The Vendor at Public Sale

When a horse has been sold in the ring, the vendor is always advised to return with it to its stable, or at least ensure that a responsible person with authority to act is left with the horse, especially if there is likely to be a vetting. Failure to attend could be construed as a reason for rejecting the animal in extreme cases, especially

if the buyer deems that a delay is unreasonable and refuses to complete the sale on that ground. It does happen.

A vetting will not take place unless you, or your authorised agent, are present.

A vendor is not absolved of responsibility for the animal until all conditions of the sale have been fulfilled and the important details of payment and document transfer completed. The horse is still, subject to condition, returnable for vice for seven days, or more, in some cases, and, it has been known, where lameness or other unsoundness expressed itself, even after examination, for payment to be stopped and the sale to become a matter for court proceedings.

Private Sale

A vendor should declare defects and vices as at a public sale. It is normal for a vet to ask for written assurances on vices and the use of drugs.

Make sure a horse is fit to be examined for its wind, especially if it has to be lunged. I have suspended more examinations for this problem than any other.

Above all, be open and honest. If you are trying to hide something, it is usually quite evident.

18

Examination at Events and Endurance Contests

Veterinary examinations at events and contests are distinct from the routine of ordinary soundness procedures. But many of the same principles and observations apply.

Veterinary Examinations

Details of veterinary involvement at three-day events can be obtained from the published regulations of the FEI.

The following points are of interest.

1. Strict rules regarding vaccination for influenza exist and are rigorously enforced.
2. Horses suffering from infectious diseases will not be allowed to compete and are barred from entry to any event. The regulations are unambiguous in this regard and demand very high standards of disease control. This includes essentials such as supervised stable hygiene and movement of horses (from stable to exercise areas etc.) while at an event, and is designed to prevent contact with horses outside the restricted confines of the event.
3. Any prohibited substance used during the course of an event is strictly supervised and reported centrally. This may lead to a horse being withdrawn from competition, depending on circumstances which will be decided on by the ground jury.
4. Routine sampling for prohibited substances is practised.
5. Horses are examined on entering event stables for clinical signs of health and for freedom from contagious or infectious diseases. This may include a heart rate check, respiratory rate, temperature, or any other tests thought necessary. Horses thought to be a health risk are refused entry.
6. Horses are inspected for fitness to compete. This entails first observing each animal standing, perhaps handling the limbs and body, then having it trotted away and back. Limb flexion is not permitted nor can the horse be trotted in a circle except in special circumstances.
7. The identity of horses competing is routinely confirmed against their passports, which will contain details of vaccination.
8. Mares may not compete after four months of pregnancy or for nine months after their foaling date.
9. All horses are checked immediately after finishing cross-country sections for injuries, exhaustion, etc.
10. The purpose of prohibited substances regulations is to prevent the use of performance-enhancing drugs or drugs which might mask lameness.
11. Any unauthorised person found with a syringe, needle or prohibited substance is penalised.

12. Oxygen is only permitted after phase D at three-day events and after the marathon at driving events. The use of masks is forbidden.
13. Normal nutrients such as saline, electrolytes, glucose are allowed within three hours of the end of phase D at three-day events or marathon at driving events, under veterinary supervision. All such matters are reported to the ground jury.
14. Any horse given oxygen or treated with normal nutrients will be examined in detail before being allowed to carry on in a competition.
15. No horse will be allowed to compete that has had a neurectomy, or whose limb has been desensitised by any means.

Manner of Inspection

1. Horses must be presented in a snaffle or double bridle only; no bandages, rugs or other tack allowed.
2. No horse may be presented with its identity concealed.
3. The examination must be carried out on a clean level surface that is not slippery.
4. The horse is observed for any sign of injury or disease and all findings recorded.
5. The horse is walked and trotted for lameness.
6. The examination is conducted as quickly as possible.

First Examination

This takes place on arrival at an event; establishing identity, vaccination history, and freedom from infectious and contagious disease. Temperature, pulse and respiration rates may be recorded.

This inspection is particularly important in the case of international competition, where its purpose is to prevent the spread of disease between countries as well as within indigenous populations of horses.

First Inspection

This takes place before the dressage: the horse is inspected in hand, at rest and in movement, on a clean level surface.

Horses unfit on account of lameness or condition are eliminated. A second examination may take place after a period of rest in some cases.

Second Inspection

This takes place after phase C, during the ten-minute halt. Any lame or exhausted horse will be eliminated. Heart rate may be checked here and again before the horse re-starts. Where the rate seems excessive – 80 per minute or more – a horse might not be allowed to continue.

Second Examination

This takes place after weighing at the end of phase D. Any injured or exhausted horse will be treated at this time. A decision will be made on whether or not a horse is fit to return to its own stable, should be transported, or retained for further treatment.

Third Inspection

This takes place before the jumping test and is the same as the first inspection.

Rules for Dressage Events

Examination on arrival is the same procedure as for a three-day event. Identity is checked against the horse's passport, and it may be necessary to check age in the case of some competitions. The fitness inspection is carried out not later than the afternoon of the day preceding the competition. The manner of this inspection is the same as for a three-day event.

Rules for Driving Events

The first examination and first inspection operate on a similar basis to the first examination and first inspection of the three-day event. The first inspection may take place on the day before the competition. Horses are eliminated for lameness, injury or poor condition.

The second inspection occurs during the ten-minute halt. Lamé, injured or obviously exhausted horses are eliminated.

The second examination occurs at the finish of competition B, when any injuries are treated.

The third inspection takes place before competition C. Horses are examined either in hand or harnessed to the vehicle.

All ponies competing must carry an official measurement certificate. Ponies over eight years must have a life measurement certificate, or an annual certificate, dated within one month of the first competition for that year. For FEI competitions this must be an official FEI measurement certificate.

Veterinary Guidelines for Long-Distance Driving Events

In accordance with the regulations of the

British Driving Society, the vet is present for two reasons.

1. To gauge the health and fitness of all horses and ponies involved. This includes clinical examination before the start, during the event and after the finish. Horses and ponies failing this examination are not allowed to compete or continue. On the final examination, horses and ponies failing the test may be eliminated or have penalty points imposed on them.
2. To provide a casualty service.

Teams may start provisionally (with the proviso that they may be stopped at any checkpoint) providing there is no risk of pain or suffering to any animal.

The Preliminary Examination

Each animal is presented unharnessed prior to the start of the drive, and examined by the vet, usually in the presence of a steward, who acts as writer. First, the pulse may be taken and any animal whose pulse rate is greater than 64 per minute is eliminated. The reason for this is to prevent horses from taking part which might become exhausted during the drive. High resting pulse rates can indicate dehydration or infection.

Any animal found to be lame would also be refused permission to start.

The shoes and feet are checked and any loose or improperly fitting shoes may lead to penalties, or the animal could be refused permission to compete.

The general condition of the animal will be inspected, with particular attention given to injuries to the mouth or harness sores.

It needs to be stressed that all these measures are practical and commonsense; they are only taken to save horses from suffering and risk of accident.

Halfway Halt

After a twenty-minute rest period, horses are examined out of the vehicle but in harness. Special attention is given to lameness and injuries – especially harness rubs.

The minute test for pulse is carried out. This involves trotting the animal for 30 m (35 yd) away from, and back to, the vet. At one minute exactly after the start of the trot the pulse is taken and counted for a full minute.

Rates of over 64 per minute mean elimination, and penalties are imposed for rates above 56. Borderline cases are given a further ten minutes rest before undergoing another minute test – this time is normally added to the time of the competitor.

A pinch test for dehydration is carried out by taking up a fold of skin at the base of the neck. Failure of the skin to flatten after ten seconds means failure of the test. Those just below this are warned and advised to water the animal. Particular attention is given to this turnout for the remainder of the drive.

carried out and horses are eliminated if they fail, as previously described.

4. All animals are checked for injury, soreness, etc.

Penalty points may be allotted by the vet for the following.

1. Pulse rates above 56.
2. Poor condition.
3. Sores, lacerations of body, limbs and mouth.
4. Dehydration.

Long-Distance Rides

Conditions for examination on long-distance rides will follow the same basic principles as for driving events. The idea is to eliminate animals unfit to take part; to remove those which are not fit to carry on; to prevent, as far as possible, the development of crises due to dehydration, fatigue or exhaustion; and to treat any injuries that occur along the way.

The Finish

A quick appraisal is made as each turnout passes the finish. The horses then rest for 30 minutes before being examined again. Horses obviously lame or exhausted will be attended to straight away.

1. The minute test for pulse rate is carried out on all animals. If the pulse rate is 64 or over the animal is eliminated. Penalties are awarded for pulse rates in excess of 56 per minute. For this reason it is important to ensure horses are examined as close to 30 minutes after the end as possible.
2. Horses are trotted and eliminated if lame.
3. The pinch test for dehydration is

Examination for Insurance

Horses are insured for a number of reasons varying from death to pregnancy, loss of use to health care.

In some cases a person buying a horse will wish to take out immediate insurance on it. It is therefore vital that this is taken into consideration in the vetting and that any defect likely to be refused cover be brought to the attention of the buyer. It is possible that such a consideration will influence the decision to buy.

Generally, the importance of veterinary examinations for insurance varies with the value of the animal, the risk element of the activity in which it is involved, and other special considerations such as fertility in a

stallion or live-foal cover for an in-foal mare.

Special terms and considerations may apply to the examination and these will be dictated by the insuring company.

Examinations for insurance for racing are similar to soundness examinations, with the possible exception of a demand that the horse be subjected to strenuous exercise. However, the underwriters will insist that the horse be in sound health, free from infectious or other disease, lameness or injury, or, in fact, any physical disability.

Details may be required from the examining vet of pulse, respiration and temperature. The heart and lungs are routinely listened to, and the eyes examined by ophthalmoscope.

In addition to this, in the USA, the vet may be presented with a certificate to complete that asks such questions as:

1. Is the horse a bleeder?
2. Has the horse had any major surgery?
3. Has the horse been denerved?
4. Is there any evidence of laminitis or consequent changes in the feet?
5. Has the horse been castrated?
6. If a colt, are both testicles present?
7. If a mare, is she in foal?
8. Is there any history of colic?
9. Any evidence of firing?
10. Is the stabling adequate?
11. Is there contagious disease in the neighbourhood?
12. Result of a fecal examination.
13. Result of a complete blood count.

In the case of a foal, it is usual for it to be at least 24 hours old before being covered for insurance, although mares may be insured to produce a live foal, in which case the foal would be insured for a specified period after birth. Examination, in the case of a foal being insured at a day old, will naturally exclude all neonatal diseases. The foal must be strong and sucking normally, must have no temperature and no sign of congenital or other defects.

It is the prerogative of the insurer to exclude any existing disease or defect which is likely to influence the future health, or possible lifespan, of an animal. Insurance may thus cover all eventualities excluding those which are declared and specified.

An abnormality found in, say, a joint or tendon in an older horse may result in cover being excluded in the case of any eventuality resulting from that specified problem. This makes the importance of soundness on purchase vital if the horse is to be insured.

Insurance policies that cover veterinary attendance and treatment will exclude existing conditions which may give rise to expense in the future; a simple example of this is sarcoids. This, of course, is only common sense and precludes claims from unscrupulous individuals for conditions which exist at the time a policy is taken out.

Conclusion

It will be readily appreciated from all the foregoing that the purchase of horses is filled with pitfalls, particularly for the amateur. The fact that even professionals rely so heavily on veterinary examination is proof of the value of the procedure adopted. The world's leading horsemen, be they riders, trainers or breeders will virtually all seek a vet's opinion when they buy.

The value of this opinion is not only the volume of knowledge and experience gained by vets throughout the years, but it is also the proven success of the procedure, which has created demand for itself universally.

As more and more people become interested in the horse, for leisure and sporting purposes, this service will continue to grow in importance.

Index

Page numbers in *italics* refer to illustrations

Abdomen 34, 79-80
Abscesses 27
Action 94-7, 99, 131
Age 128
Agents 171
Alae 43
Allergic rhinitis 3
Allergies 104
Anaemia 42
Anal sphincter 81
Arthritis 153
Arytenoid cartilages 47
Atlas 48, *113*
Atria 12
Auction, Contract at 172
Auctioneers 10, 172
Auscultation 106
Autonomic system 117
Axis 48, 112-13

Back 33-4, 79, 148
Backing 100-1
Balance 4-5, 95
Bars of foot 71, 77
Biceps brachii muscle 29
Biting 6
Bleeders 110, 145, 163
Blood
 analysis 159
 count 188
 vascular system 121
Bog spavin 90
'Bone' 60, 140
Bowels 7

Boxwalker 161
Brain 37
Breathing 6
 see also Respiration
Breed influence on foot shape 77-8
Broodmare certificate 162, 164
Brushing 98
Bursae, Synovial
 see Synovial bursae
'Bute nack' 49
Buyer 1-2, 17, 111, 172
Buying considerations 167-8, 174-9

Cab-horse disease 71
Calcaneus 87
Calcification 74
Canine teeth 40, 131
Cannon 31, 60
Carpal bones 56, 58
Carpal joint 58
Carpus 51, 57-9, *154*
Cataracts 20
CEM (Contagious Equine Metritis) 145, 165
Certificate
 broodmare 162, 164
 of soundness 129, 137
 vendor's 2, 16-17, 167
 veterinary 163, 175
Certification 125-38
Cervical vertebrae 112-14
Cervix 122-3
Cheeks 39, 41
Chronic Obstructive Pulmonary Disease
 see COPD
Ciliary muscle 19
Circulation 77

Clavicle 51
 Clicking (forging) 98
 Coat 6, 27
 Coccygeal vertebrae 116
 Cobs 127
 Coffin joint 72, 75
 Coggins Test 145
 Colour 128, 141
 Colt 140-1
 Conchae 38
 Conditions of sale
 see Sale, Conditions of
 Conformation 23
 Conjunctiva 20
 Constipation 118, 120-1
 Contagious Equine Metritis
 see CEM
 Contract at auction 172
 COPD (Chronic Obstructive Pulmonary
 Disease) 7, 104, 109
 Cornea 17, 20
 Corns 72
 Coronary band 75
 Corpora nigra 17, 20
 Costal arch 79
 Coughing 105
 Cow hocks 89
 Cow-kicking 84
 Cracks, Hoof 33
 Cranium 37, 39, 45
 Crib-biting 161, 163, 169, 182
 Croup 82
 Cryosurgery 8
 Cryptorchidism 123
 Curb 36, 90, 123

Dangerous horses 5
 Declarations 181-2
 Denervating 120, 163
 Dentition 131-6
 Description 126-30, 161, 169, 181
 Diaphyses 56-7
 Diarrhoea 118, 120
 Digestive system 120-1
 Digital cushion 73, 77
 Discharges
 eye 6, 20
 nasal 6, 26, 44

Diseases 7, 104-5
 Dishing 56
 Distal sesamoid of navicular bone 75
 Dock 80-1
 Dressage
 events 186
 horses 127, 146
 Driving
 events 186
 horses 149
 Droppings 6, 120
 Drugs 165, 170

Ears 23, 27, 44-5, 48
 lop 119
 ECG 15-17, 159
 Elbow 30, 56
 capped 30, 57
 Electrocardiography
 see ECG
 Endoscopy 106, 143, 156-7
 Endurance contests 184-8
 Enteritis 6
 Epididymis 124
 Epiglottis 47
 Epiphyses 33, 56-7, 152
 Eustachian tubes 28
 Eventers 127, 146-7
 Ewe-neck 23
 Examination
 after rest 125-38
 at events 184-8
 at trot 98-100
 at walk 92-7
 for insurance 187-8
 special 153-9
 visual 21-36
 Examination of
 ear 45
 elbow 57
 eye 19-20, 23, 44
 foals 139-41
 foot 71-2
 head 23-8, 39, 49
 hind limb 88-91
 knee 58-9
 larynx 47
 metacarpal bones 60-2

- mouth 40-1
- nostrils 43-4
- rectum 80
- pastern 68
- shoulder joint 53-5
- spine 166
- sternum 51
- tendons 65-6
- wind 108-10
- Exercise 103-11, 178
- Eye 6, 10, 17-19
 - examination of 19-20, 23, 44
 - wall 17, 24, 130
- Eyelids 17-18, 24
- Face 37, 39
- Faeces 6, 120
- False nostril 43-4
- Fees, Veterinary 179
- Femur 30, 82-4
- Fetlock, 31-3, 65, 67-8, 141, 152-3
- Fibula 83, 86-7
- Firing marks 61
- Fistulous withers 53
- Flank 34
- Flehmen reaction 120
- Flexion tests 101
- Foals 139-42
- Foot 31-3, 36, 71-8
- Foot/pastern axis 31
- Forearm 30
- Forelimb 25, 28-33, 51
- Forging 98
- Frog 72, 76-7
- Future use 183
- Galvayne's groove 41, 134-5
- Gaskin 89
- Gelding 80, 123-4, 144
- General Stud Book 126-7
- Genitalia 80, 82
- Glands 25-8, 46, 48-9
- Glottis 47
- Grass rings 76
- Grass sickness 117
- Grease 68
- Grey horses 8-9, 28
- Grunting 110
- Guttural pouch 27-8, 49
- Hacks 127
- Haunch 79
- Head 23-8, 37-49, 128-9
 - carriage 4, 96
 - shaking 3
- Health 6-7, 118-19
- Hearing 45, 119-20
- Heart 12-17, 110-11, 211
 - murmurs 10, 14, 157, 178, 182
- Heat, Detection of 69
- Heave line 105
- Height 130, 141
- Hemiplegia, Laryngeal 163
- Hernia 80, 140
- Herpes virus 24, 41-2, 81
- Hind limb 34-6, 82-91
- Hip 35-6, 83-4
- Hobday operation 47
- Hock 25, 35-6, 83, 87-91, 141, 153
 - capped 36, 90-1
 - cow 89
- Hoof 75-7, 102
- Humerus 28, 30, 51-3, 55-6, 84
- Hunter types 127, 142, 146
- Hyoid apparatus 37, 46
- Ilium 34, 79, 82, 88
- Incisors 41, 131
- Infections 7, 9, 24, 43, 109
- Inflammation of tendons 64-5
- Influenza 7, 165
- Infundibula 134
- Inguinal region 80
- Inspection 175-6, 185
- Insurance, Examination for 187-8
- Intermandibular space 46
- Ireland, Pre-vetting in 164
- Iris 17
- Ischium 82
- Jaundice 41
- Jaw 37, 39, 45, 123, 140
 - overshot 26
 - undershot 25
- Joint mobility 102
 - see also* Coffin, Fetlock, Hip, Hock, Knee, Shoulder, Stifle
- Jugular vein 27, 48-9

Jumping bump 34, 82

Keratoma 71-2

Kicking 3, 6, 84

Knee 23, 30-1, 51, 56-9, 140-1, 153

Lameness 125

at trot 98-100

elbow 57

hind limb 88-9, 123

hock 90-1

shoulder 55

spinal 97

splint 62

tendons 65

walk 92-5

Laminae 73-4

Laminitis 76-7, 155

Laryngeal hemiplegia 163

Laryngeal structures 143

Larynx 46-7, 156, 162-3

Law, Comments on the 166-73

Ligaments 58, 61, 62-3, 66-7, 72

Ligamentum nuchae 112-13

Limb

fore 25, 28-33, 51

hind 34-6, 82-91

lower 60-78

markings 130

Loins 79

Long distance

driving events 186-7

rides 187

Lower limb 60-78

Lumbar vertebrae 114-15

Lungeing 101, 106-7, 181

Lungs 103-4, 110, 148

Mane 130

Manners 130

Mares 80, 122, 145

Marie's disease 30

Markings 128-30

Maturity and soundness 149

Melanoma 8-9, 28, 81

Menisci 84

Metacarpal bones 51, 58, 60-2

Metatarsal bones 83

Misrepresentation 171

Molars 131

Mouth 25-6, 39-41

Mucous membranes 41-3

Mud rash 9, 68

Muscular atrophy 29, 35, 47, 53-4, 57, 82

Muscles 28-9, 52, 56

Name, Change of 171

Nasal

cavities 43

discharges 6, 26, 44

membrane 105

Nasolachrymal duct 20, 43-4

National Hunt racehorses 144-5

Navicular

bone 52, 73, 75, 153

bursa 63

disease 4, 102

Neck 23-5, 28, 37-49, 96, 130

Nervous system 112, 116-20

Noise, Making a 156, 163

Non-thoroughbreds 126-8, 141

Nose, Discharges 6, 26, 44

Nostrils 24, 43-4

Nymphomania 123

Oesophagus 40, 47-8

Older horses 152

Olecranon fossa 55-6

Operations 182-3

Ophthalmoscope 17, 19-20, 119

Orbits 18, 37

Organ systems 112-22

Os coxae 82

Osteodystrophobia fibrosa 31

Ovaries 123

Pain 96, 101

Palate 40, 109

Papillomas 8-9

Paralysis 117

Parrot mouth 26

Pastern 31-3, 36, 51, 69-71, 140

Pedal

bone 51, 153, 155

osteitis 73, 156

Pedigree 126, 140

- Pelvis 34, 82, 94
Penis 123
Pericardium 12
Perineum 81
Perioplic ring 75
Periosteum 61
Phalanges 51, 61, 69-71, 73-4, 83
Pharyngeal lymphoid hyperplasia 107
Pharynx 156
Pin bone 34
Plaques 45
Pneumonia 7
Pointing a toe 4, 25
Points of the horse 22
Point-to-pointers 127, 146, 148
Poll 47-9, 113
Ponies 127-8, 149, 151
Pregnancy 145
Pre-sale vetting 144, 163-4
Presentation for veterinary examination 3-4
Private sales
 see Sales, Private
Proximal sesamoid bones 68-9
Pubis 82
Public sales
 see Sales, Public
Pulse 46
Pupil 19-20

Radiography 69, 71-2, 74, 143, 153-6
Radius 51, 55-6
Ragwort 41
Reactions, Horse's 5
Rectal examination 80
Reflexes 117-18
Reproductive system 121-4, 143
Respiration 104-5, 107-8
Respiratory system 143
Responsibility for horses 160
Retina 20
Retinal layer 18
Returnable horses 161
Rhinitis, Allergic 3
Rhinopneumonitis 42
Ribs 34, 50-1
Rigs 123-4, 143, 161
Ring, Sale 176-7
Ringbone 69-71, 123

Ringworm 9
Roaring 47, 107, 123, 163

Sacrum 34-5, 82, 94, 115-16
Saddle sores 79
Sale 1-3
 conditions of 10, 27, 140, 144, 160-5, 170, 174
 reasons for 170-1
Sale of Goods Act 1979 166
Sales
 buying at 174-5
 pony 150
 private 1-3, 27, 166-8, 177-8, 183
 public 1-2, 108, 160, 166, 177, 183
 ring 176-7
 Thoroughbred 139
 yard 10-11, 106-7, 121, 125
Sarcoids 7-8, 45, 81, 123
Scapula 28, 51-3
Scarring 19-20, 59
Sclera 17
Seat bone 82
Seedy toe 76
Selling on 178-9
Semen 123
Senses 119-20
Sesamoid bones 51-2, 58, 61, 66-9, 75, 84-5, 155
Sex 128, 141
Sheath 123
Shins 31, 61, 143
Shiverers 119, 143, 145, 161
Shoeing 102
Shoulder 24-5, 53-5
Show horses 148, 148-9
Show jumpers 127, 146-7, 150
Sidebone 74
Sight 119
Sinus infection 24, 43
Sinuses 44-6
Skin conditions 7-10
Skull 37-49
Smell 120
Sole 32-3, 71-2, 74, 76, 91
Soundness 20, 23, 152, 168
Spavin 36, 90-1, 123
Speedy cutting 98

- Spine 112-16
- Splint bones 60
- Splints 61-2, 143, 154
- Squamous cell carcinoma 9
- Squealers 123, 169
- Stallion 80, 123, 145
- Stance 4-5
- Stay apparatus 58
- Sternum 51
- Stethoscope 16, 104, 120
- Stifle 35-6, 79, 83-6, 89
- Strangles 26-7, 42, 46
- Stringhalt 95, 119, 145
- Stumbling 100
- Submaxillary lymph nodes 42
- Supraorbital process 23, 37-9
- Suspensory ligament 66-7
- Sweet itch 9-10
- Synovial
 - bursae 29, 52, 55, 113
 - fluid 52, 58
 - sheath 58, 63
- Tail 34, 95, 130
- Tarsus 83, 87-91
- Taste 120
- Team chasers 127
- Teeth 37, 39-41, 45, 131-6
 - see also* Dentition
- Temperament 5-6, 130-1, 147, 178, 180-1
- Temperature 27
- Temporal fossa 37
- Tendonitis 91
- Tendons 31, 58, 61-6, 68, 72-3, 148
- Testicles 123-4, 140
- Tests
 - flexion 101
 - hoof 102
 - wind 108-110
 - see also* Examination
- Tetanus 18
- Thigh 79
- Thoracic vertebrae 114
- Thoroughbred 126
- Thoroughpin 90
- Three-day eventers 127, 146
- Three-day events 184-8
- Three-year-olds 144
- Thrush 72
- Thyroid gland 27-8
- Tibia 83, 86-7
- Time limits 171
- Tongue 40, 46
- Touch 120
- Trachea 46-8, 103
- Tracheotomy tube 47
- Training 180
- Trephining 45
- Trial 171-2
- Triceps muscle 28
- Trot, Examination at 98-100
- Trotters 152
- Tuber
 - calcis 87-8
 - coxae 34, 82
 - ischii 82
 - sacrale 34, 82
- Turbinate bones 39
- Turning 95-6, 100
- Twins 169
- Two-year-olds 143-4
- Tympanum 44
- Udder 123
- Ulna 51, 55-6
- Ultrasonic scanning 66, 121, 157
- Umbilical hernia 34
- Unbroken horses 149
- Unfair conditions 170
- Unfit horses 109
- Unregistered horses 172
- Unwarranted horses 175
- Uraemia 121
- Urinary system 121
- USA
 - sale conditions in 163-4
 - vet's certificate in 188
- Uterus 123
- Vaccination, Influenza 165
- Valves, Heart 13
- Vendor 172, 183
- Vendor's
 - certificates 2, 16-17, 167
 - interests 180-3

- Ventricles 13
- Vertebrae 33-4, 49, 79, 112-16
- Vertebral spines 79
- Veterinary
 - certificate 19, 175
 - examination 21-36, 184-8
 - fees 179
 - surgeon 1-2, 179
- Vetting 144, 164, 176-8
- Vices 10, 161, 169, 174
- Virus 7
 - disease 7
 - Herpes 24
 - infection 109
- Viscera 79
- Vision 4-5, 18-20
- Visual examination 21-36
- Vocal cords 46
- Voluntary system 117
- Vulva 121-3

- Walk, Examination at 93-7
- Wall eye 17, 24, 130
- Wall of hoof 75-6

- Warranties 10, 33, 144, 147, 160-5, 168,
171, 174
 - written 138, 181-2
- Warts 8-9
- Weaving 143, 161, 169
- Wheezing 104-5
- Whistling 104, 107, 163
- White line 76
- Wind 103-11
- Windgalls 33, 68
- Windpipe 48
- Wind-sucking 47, 143, 161, 169, 182
- Wings 43, 48
- Withers 28, 33, 53
 - fistulous 53, 113
- Wobblers 119, 163
- Wolf teeth 40, 131-2
- Working horses 152
- Worms 6

- Yearlings 141-3, 162-3
- Young horses 149
 - see also* Foals, Yearlings, Three-year-olds,
two-year-olds

Peter Gray MVB MRCVS was born in Dublin in 1941. His father, a staff officer in the Irish Army, was a man whose strong farming background crossed many generations and whose genetic ties with the land were evidently passed on to his youngest son.

The author entered University College Dublin in 1958 and began his clinical career in 1964 in a large mixed practice in North Devon. In 1967 he started practice in Fermoy, County Cork, a major growth area in the world of Thoroughbred breeding. Clients, in the main, were professional horsemen, making their living from horses.

From this scene, he was taken into the international sales circuit, acting on behalf of buyers not only in Dublin but at most major British sales. He also vetted for leading trainers and agents buying in Ireland and for individuals buying three-day-eventers and show-jumpers.

In 1972 he led the clinical attack in the first European outbreak of equine virus abortion accompanied by paralysis. This particular outbreak remains one of the worst of its type to this day, yet losses were minimal. The manner in which the problem was tackled laid the basis for the way such outbreaks are approached even today. It was subsequent to this that the code of practice now used for this disease was instigated.

For several years in the mid seventies he ran a foaling station under contract to one of the larger studs in Ireland. He also developed an active interest in physiotherapy as a form of treatment for lame horses, as well as the clinical diagnosis and control of virus diseases in racing and competing horses, a field that is still poorly charted in veterinary literature.

In 1983 he left Ireland and took out a permit to train under National Hunt rules, then acted as resident vet in one of the larger racing yards in Britain during a virus outbreak in the following Flat season.

In 1987 he moved to Herefordshire, to the small secluded village where he now lives with his wife and their two daughters.

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